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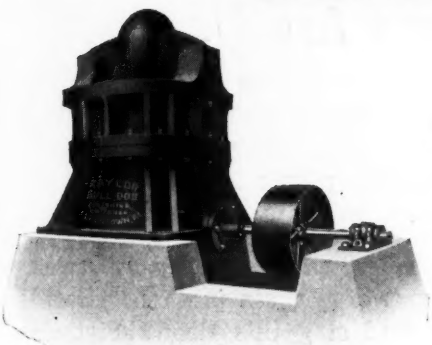

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April, 1924

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Circulation 7,600 copies

"Brownhoist Cranes Are Unsurpassed"

"Our company has used several makes of locomotive cranes and we know by comparison that the Brownhoist is not surpassed by any other," says the France Slag Company. This company operates many slag and stone crushing plants in Ohio and Michigan and have used Brownhoist cranes for years.

The Brownhoist at their Toledo plant handles an average of 500 tons of slag a day at a cost of 4 cents per ton. Besides its regular work of handling crushed slag this Brownhoist does all kinds of odd jobs around the plant.

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MATERIAL HANDLING MACHINERY

Pit and Quarry

A Monthly Journal for Producers of Sand, Gravel, Stone, Cement, Gypsum, Lime and Other Non-Metallic Minerals

VOL. 8 CHICAGO, ILL., APRIL, 1924 NO. 7

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Barber-Greenes save the Crume Brick Company $3902.14 a year in wages alone

Cutting Operating Costs 54%

Costly delays were frequent at the Crume Brick Company of Dayton, Ohio, before a Barber-Greene Loader and Conveyor were installed.

Labor troubles, due to the disagreeable nature of the work, made it difficult to keep the plant supplied with materials.

Now, working only three or four hours a day, the Barber-Greenes keep an advance supply constantly on hand.

"These machines are displacing six men and saving $3902.14 a year in wages alone," said Mr. W. H. Crume, president of the company. "They cost only $.0732 per ton to operate, which represents a 54% reduction over our former cost."

The Loader, digging sand and gravel direct from the banks, feeds the 39-foot Barber-Greene Portable Conveyor, which in turn discharges to the stationary conveyor. This carries the materials to a 125-ton bin in the plant.

One operator and a helper easily handle the Barber-Greenes, and have ample time to look after the stationary conveyor.

The Crume Brick Company recently purchased a second Barber-Greene Loader, which they are using for stripping.

Wherever an unfailing supply of materials is needed, and wherever greater economy of operation is sought, there is a decided need for a Barber-Greene.

Our N Catalog holds many timely suggestions that bear directly on your material-handling problems. Send for it today.

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Portable Belt Conveyors — Self Feeding Bucket Loaders

Pit and Quarry

Vol. 8 Chicago, Ill., April, 1924 No. 7

One Phase of the Immigration Problem

THE vital problem in industry today is labor:—skilled and unskilled. And of the two, the problem of unskilled labor is the more crucial. The number of skilled workers in this country has increased amazingly since the war. Men were taught to perform more efficiently and they were reluctant to return to the ranks of the unskilled. As a result, there are enough skilled laborers available now to meet the demand far more adequately than it can be met in the field of the unskilled. Labor turnover in the ranks of the skilled workmen is negligible as compared with that among the unskilled.

The shortage which the manufacturer faces in unskilled labor is largely due to the present status of immigration. The Federal Immigration Restriction law of May 19, 1921, has been followed by results which render it necessary for industry to solve a difficult problem. The first year after the passing of the law, only 32,728 immigrants were allowed to come into the United States. During the same year, more than 100,000 left the country. This means that we lost almost 70,000 unskilled laborers. Statistics show that there has been a large loss of skilled labor due to the lowering of the ratio of excess immigration of skilled workers. The loss of unskilled labor last year was appallingly heavy. Hence, the subject of immigration offers a problem which merits exhaustive and intensive study. Every phase of the question is vital to the interests of executives in whose hands rest the future of American industrial progress.

There is one possibility which offers itself as a partial solution of the problem. Labor saving machinery always replaces unskilled labor. It is operated by skilled labor and renders industry increasingly independent of the unskilled immigrant. It increases production, ensures greater efficiency in operation, and improves the opportunity of the skilled laborer. From the viewpoint of the operator, labor saving machinery is advantageous in every way. The more it replaces unskilled labor, the more it eliminates the various and trying difficulties which are always associated with the handling of labor.

While machinery does incur expense due to breakage and deterioration, it is far less burdensome than the responsibility of carrying labor over periods of depression, a responsibility which, heretofore, labor has had to assume itself but which social legislation is gradually forcing upon industry.

Machinery is produced in the United States; it is an American product in the true sense of the word. We are constantly improving devices for every process of operation in every field of industry. We are not forced to look elsewhere for machines; in that field we are independent. Our increase in the production of machinery adds to our national wealth, while all money paid to the unskilled laborer is likely to be sent out of the United States to increase the national wealth of some foreign country. The increasing demand for labor saving machinery is a stimulus to our best inventive genius; it offers quick returns for the application of intelligence to this practical phase of industry. We profit by the industry which creates the machines which, in turn, add to the financial profits of all concerned where they are installed.

Labor saving machinery, however, cannot solve entirely the problem of immigration and its relation to labor shortage. It may alleviate the strained condition of industry and relieve the tension for a time, but the unskilled worker cannot be entirely replaced. As long as there is so vital a need for him, there will be a necessity for a better understanding of immigration in all its phases. We must study this foreigner who is coming to our shores to become a part of our social and industrial life. What are his ideas and how may they be adjusted to our standards? Is he a potential American citizen? Will he develop into a desirable workman? Are his children and grandchildren to be the aldermen in our cities and the foremen and junior executives in our industrial plants? What are the responsibilities that are ours if the descendants of this foreign speaking quarry worker are to be the politicians and bosses in the generations when our children's children are struggling with social and economic problems?

Lowering Accident Insurance

AT THIS TIME of the year many operators renew their accident insurance policies or, as they are generally spoken of today, "compensation insurance." Rates on such insurance are standardized by the leading companies, so it is not possible by competition to obtain lower rates; but it is possible to save money in two ways on accidents. These two ways go hand in hand, because the prevention of accidents means the saving of money, for accidents are always expensive and the safeguards that prevent accidents also lower rates to the operators.

Accidents can be prevented. The reader is referred to the November, 1923, issue of PIT AND QUARRY, page 94. In that article the necessity of having all machines properly guarded was pointed out. How accidents can be prevented in blasting, and many other ways of preventing injury to workmen, were also described. It is at this time of the year that an operator can pay attention to such matters. If this is done, and the attention of the insurance company is called to safeguards installed, it may be possible to have the rates on liability insurance lowered, which would mean a nice saving during the year 1924.

Why Should I Join the Crushed Stone Association?

WE can think of no better way to set before the quarrymen of the country the claim that the National Crushed Stone Association has upon their allegiance than to publish the following article written at the request of PIT AND QUARRY by Mr. John J. Sloan, president of the association. Mr. Sloan's statements put the case for the association very clearly and effectively.

"The National Crushed Stone Association doubled its membership—discharged all its obligations and ended the past year with a creditable cash balance.

"It did this following a change in plan of membership and payment of dues, placing it on a more democratic basis almost insignificant in cost when compared with the benefits attained. Through its widespread membership in practically every state in the union—its efforts at Washington to secure equitable freight rates, proper car service and other matters of general interest to the industry it has produced benefits that are worth many times the cost of membership to every producer in the country whether a member of the organization or not, for the effects of the association's work were a benefit to the entire industry.

"To continue to protect as well as to promote the interests of the industry it needs increased membership in order to make known the widespread activities of our industry and its basic relations to the many and varied classes of industry that it serves. Numerous matters pertaining to tariffs, rates, taxes, depletion and depreciation that are of interest to every producer must be satisfactorily worked out at Washington. The importance of the industry and the magnitude of its movement of traffic must continue to be emphasized before railroad officials and traffic organizations.

"Membership in an organization implies prestige. Prestige means a distinct recognition for one or more factors that are valuable to the producer and his trade. Additional membership means growing importance reflected in official action on the many matters that pertain to an organization like ours throughout the various municipal, county, state and federal departments. Membership in an organization means that you have the support of the entire membership on any matter wherein your rights are infringed and where you are properly entitled to other considerations. Aside from these matters the practical value of membership in an organization, which means to assist each other by an interchange of ideas, information that runs the entire gamut from production to markets, is worth many times the cost of membership.

"You carry an insurance on your building and your labor for protection. Why not for a petty item carry membership in an organization that likewise insures in many other respects the welfare and prosperity of your business. You are as welcome as the flowers in spring. There is nothing formal about it. It is an open, get-together association in a plain, practical way for the benefit of all. Its officers without compensation of any kind give their time and attention for the good of the industry. Join in and take a part in promoting your own welfare."

Rock Dusts for Use In Coal Mines

The use of light colored inert mineral powders for "dusting" coal mines to prevent dust explosions is now quite extensively employed in Europe. To encourage acceptance of the method in America, a series of maps is being prepared by the Department of the Interior at the New Brunswick, New Jersey, station of the Bureau of Mines, on which will be indicated the position of limestone quarries and gypsum mines contiguous to coal fields. Such mines or quarries might supply the necessary mineral powders at low cost from their waste products.

When Will Road Building Cease?

A NUMBER of quarry operators and a few gravel producers have spoken to the writer during the past few years in regard to a future market for their products. Their complaint is that the main market they now find for their products is from road building and that as soon as our roads are all built it will be useless to operate their pits and quarries.

Road building seems to be going on at a rapid rate and in some sections of the country faster than in others, so that there may be a seeming chance for a pessimistic view of the future of the stone and gravel business. However, if one considers the actual facts in regard to road building there is no reason why the supplying of materials for road work should not last indefinitely.

During the past two or three years new road building throughout the United States has been boing on at the rate of a little over 35,000 miles per year. According to the statistics of the U. S. Bureau of public roads, at the end of the year 1923, we had 340,000 miles of paved roads. The total mileage of all highways in the country is two million, eight hundred nineteen thousand, three hundred and eighty-six. This leaves about two and a half million miles of unimproved roads.

It will thus be seen that at the rate we are building it will take 71 years to improve all of our roads and before that time arrives there will no doubt be additional miles of roads laid out.

One of the leading road engineers has talked the matter over with the writer and stated that ten years ago when he was first appointed state road engineer of one of our eastern states that he believed he was obtaining a five-year job. He soon changed his opinion and stated he had a life time job at road building and that other engineers would follow him indefinitely.

Although the building of roads is important and means a large demand for stone and gravel, yet the crux of the whole matter is the maintenance of the roads after they are built. It has been found that it is useless to spend money to build a new road and then not maintain it properly. Heavy trucks, the number of which is steadily increasing, wear out the best built modern roads and after a year or two large sums of money must be spent for maintenance and in from 10 to 15 years most of these roads must be rebuilt.

There will not be a lack of money to finance road building for with appropriation by the national government, bond issues by states and counties, and taxes levied on automobiles and gasoline, millions of dollars are raised each year for road building. Thus stone and gravel producers need have little worry in finding a market for their products. Good roads also mean that other construction work will be done that will give a further demand for products from pits and quarries.

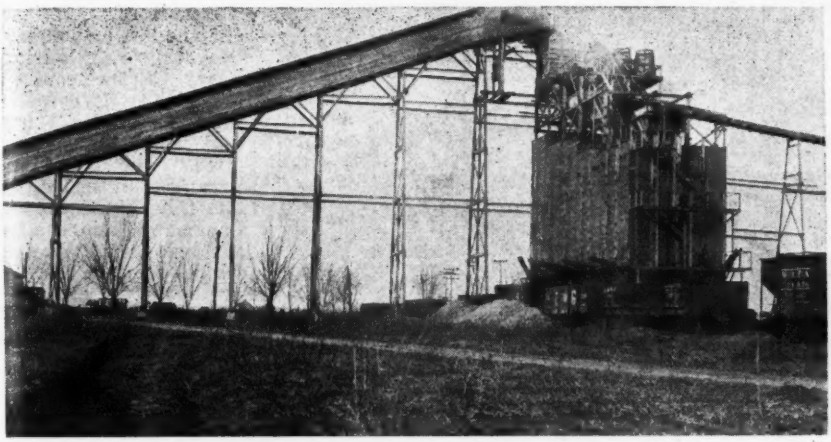
Georgia's Mineral Resources

Judging by the interest being shown in the subject of various civic and other organizations, the mineral resources of Georgia constitute a growingly varied and profitable source of the state's natural wealth.

There is a total of 36 minerals in the state—asbestos, barytes, bauxite, cements, chlorite, chromite clays, coal, copper, corundum, feldspar, fluorspar, fuller's earth, gold granites, graphites, iron ores, limestones, manganese, marbles, marls, mica, ocher, precious stones, potash-bearing slates, pyrite, road materials, sand and gravel, sericite, serpentine, slate, talc and soapstone, tripoli, mineral waters, artesian wells, water powers.

Gold has been mined for 75 years, and the state stands second in the production of fuller's earth, Florida being first. Georgia is also in second place in production of marble, Vermont being first. The most important precious stones produced are diamond, ruby, amethyst, rose quartz, rutilated quartz, smoky quartz, agate, jasper, opal, beryl, garnet, rutile and moonstone.

The Prattrock crushing plant under construction at Prattrock, near Folsom, Calif., is practically completed and ready for production.



General View at New Plant of Alabama Sand & Gravel Co.

Adding to Alabama's Facilities for Gravel Production

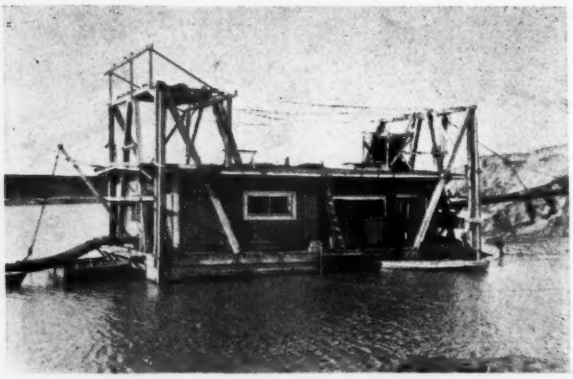
Alabama Land and Gravel Company of Montgomery Erects Modern Washing and Screening Plant to Add to Production Secured with Pump Equipment.

AT Montgomery, Ala., the Alabama Sand & Gravel Company is excavating and loading sand and gravel for the large market afforded by the district around. The announcement of the fact made in just this way may arouse no particular interest, but when it is put in a different way and the statement is made that Mr. H. A. Bible, formerly of the Bible Sand Company of Chattanooga, is operating the plant, interest immediately attaches to the announcement, for Mr. Bible is well known to all southern producers and to producers of other sections as well. He has been in the sand and gravel business for upward of thirty years and has built a business that has progressed through various stages from an operation that had for its only equipment a number of shovels, a wagon, and a mule up to the present when a very efficient and completely equipped plant supplies the materials.

The plant of the Alabama Sand & Gravel Company is located about four or five miles out of Montgomery on an old cotton plantation which is still used in part for the growing of the famous southern product. Sand and gravel are present on the property in abundant quantities under a soil overburden that is disposed of without unreasonable cost. Sand and gravel occur in proportions that fit well into the requirements of the market. All the impurities associated with the sand and gravel in deposit are easily washed out and the products of the plant are entirely free from foreign material of any character.

Two excavating methods are in force. There is a pumping operation and a shovel excavating operation, each with its own washing and screening plant. Of these two, the plant which receives materials from the shovels is much the larger.

Sand and gravel from the shovel operation is dumped in a large concrete receiving hopper, the tracks leading up to which are at grade. Sand and gravel are drawn off from the hopper by a Stephens-Adamson apron feeder and fed to a 30-inch Goodyear rubber belt conveyor. This belt conveyor travels at a speed of



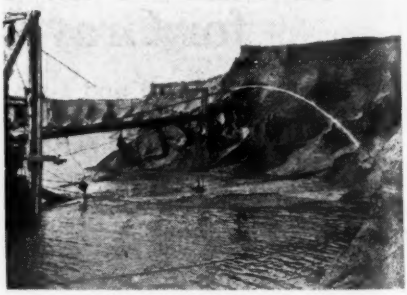
Dredge Supplies Materials for Small Plant.

213 feet per minute. It is driven by a 30 horsepower General Electric motor, running at a speed of 900 r.p.m. One of the most notable features of the plant is the way this motor is made to take care of all the power requirements, driving the belt conveyor with its apron feeder, and turning over the screens at the top of the plant.

Material discharged from the conveyor goes by chute to two 84-inch Gilbert screens with ½-inch perforations. Below each of these screens is another Gilbert with ¼-inch perforations which takes the screened products from each of the half inch screens and separates the sands which go on to settling boxes designed by Mr. J. C. Bible, son of Mr. H. A. Bible and builder and superintendent of the plant. Mr. Bible collaborated with the Stephens-Adamson Company in the design of the plant.

The settling boxes were built according to Mr. J. C. Bible's design as a result of experience that he has had in sand operations in various parts of the country. With them it is possible to secure clean and well graded sand sizes. The boxes are arranged in series, the one that separates the finer sand located a little below the one in which coarser sands are secured, the water discharged from the first box carrying along in suspension sands intended for recovery in the second.

Water for the washing operation is delivered to the top of the plant through a 6-inch riser pipe that carries the 1500 gallons all required per minute. A supply of water meets the gravel as it is discharged from the main conveyor and the material enters the ½-inch screens together with a good amount

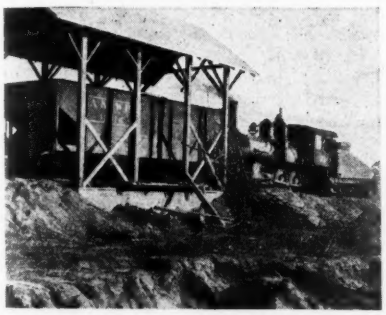


Banks are Caved Hydraulically.

General View of Deposit Showing Both Excavating Methods.

of water. A 3-inch pipe also sprays water into the ½-inch screens.

Large bin capacity is provided. These bins are of wood throughout. Cribbing of 2x6 inch size is used in the structure which has a length of 69 feet and a width of 20½ feet. There are ten bins arranged in five series, the length of the plant. Eighteen by twenty-four-inch quadrant



Dumped at Hopper from Standard Cars.

bin gates and loading chutes are provided to draw off the products of the various bins. There are loading tracks at both sides of the plant and long tail tracks for loaded car storage. Sufficient grade is provided in those tracks to make possible the movement of cars around the plant by gravity.

The pumping operation is a smaller feature and the plant in which materials is excavated by the pumps or screens is not as large or as modern as the plant just described. Sand and gravel are excavated and forwarded to this plant by an 8-inch centrifugal pump. Sand and gravel from the bank around the pit are washed down hydraulically and caused to flow in the direction of the pump nozzle. The dredge is electrically operated with transformer and all other electrical equipment located on the boat.

The Alabama Sand & Gravel Company is a progressive concern that figures largely in the sand and gravel production of the section of the country that it serves. It is on the grow and bids fair to be under the necessity of increasing the facilities in the future. Good management is the keynote and the spirit of efficiency seems to actuate everyone around the workings from the superintendent down to the humblest workman.

To Boost Membership in Stone Association

THE personnel of the membership committee of the National Crushed Stone Association includes association members from all parts of the country. Thus, the association will have boosters from all sections. The trade press has also been asked to serve and the editor of PIT AND QUARRY, as a member of the committee, will assist throughout the year in placing before the quarrymen of the country the claims of the Association upon producers everywhere for their assistance in carrying out the work that the Association is doing.

A complete list of the membership committee follows:

Otho M. Graves, Chairman, General Crushed Stone Co., Easton, Pa.
A. J. Blair, Lake Shore Stone Co., Milwaukee, Wis.
E. J. Krause, Columbia Quarry Co., St. Louis, Mo.
W. Scott Eames, New Haven Trap Rock Co., New Haven, Conn.
John J. Fitzgerald, Editor Pit and Quarry.
E. S. Hanson, Editor Cement Mill & Quarry.
N. C. Rockwood, Editor Rock Products.
O. H. Binns, Casparis Stone Co., Kenneth, Ind.
T. D. Weston, Weston & Brooker Co., Columbia, S. C.
John Wunder, Trap Rock Co., Minneapolis, Minn.
A. R. Wilson, Granite Rock Co., Watsonville, Cal.
Wm. Hammerschmidt, Elmhurst-Chicago Stone Co., Elmhurst, Ill.
C. M. Doolittle, Canada Crushed Stone Corp., Dundas, Ont.
Elwood Gilbert, New Castle Lime & Stone Co., New Castle, Pa.
Norman Hely, Edward Hely Stone Co., Cape Girardeau, Mo.
F. S. Lack, Lack Limestone Co., Paducah, Ky.
W. W. Boxley, W. W. Boxley & Co., Roanoke, Va.
E. C. Dodson, Texas Stone Products Co., Dallas, Tex.
Chas. Freiberg, Buffalo Cement Co., Buffalo, N. Y.
Allen Patterson, Marble Cliff Quarries, Columbus, O.
W. F. Wise, Stringtown Crushed Rock Co., McAlester, Okla.
H. A. Major, Chief Consolidated Mining Co., Salt Lake City, Utah.
W. S. Greensfelder, Hercules Powder Co., Wilmington, Del.
R. M. Wallace, Wallace Stone Co., Bayport, Mich.
H. H. Brandon, Ohio Marble Co., Piqua, O.

The Hugh Miller Company of Fullerton, Calif., has completed the purchase of the Santiago Rock Company, with the privilege of access to "vast stores of high grade rock and gravel in pits located west of Olive."

Portland Cement Plant for Osborn, Ohio

Construction work on the erection of a large cement plant at Osborn, Ohio, which will cost $1,750,000, will be started within the next week or so, according to a statement made last night by H. F. Jennings, secretary of the Wabash Portland Cement company, which will own the plant.

For two years officials of the cement company have been working toward the purchase of a thousand acres of land on both sides of the Big Four and Erie railroad near Osborn, and it was not until March 6 that the deal was completed. The land cost $250,000, it was said.

The new plant will have an annual output of 1,500,000 barrels of cement. When completed there will be installed three rotary kilns, measuring 10 feet in diameter and 175 feet in length. Plans will allow the installation of another kiln later, it was said last night. A warehouse will be built to accommodate 150,000 barrels, and railroad sidings will be built up to the factory.

The Osborn plant, the erection of which is the start of a large expansion program which has been planned by the cement company, will be the second plant to be built. At present the company operates a large plant at Stroh, Indiana, in the northeast corner of that state.

It is to release the output of that plant to supply the growing demand of Detroit and Chicago and to provide a supply for Dayton, Cincinnati and Columbus, the plant at Osborn is being built.

The site at Osborn was chosen by officials of the cement company because of double desirability. It is close to a center where an increase in building is creating a large demand for cement and there is an abundance of the kind of rock used in cement manufacture.

Surveys conducted by company engineers have disclosed a rich deposit of Clinton limestone, this particular kind of sedimentary rock being especially well adapted to cement making.

The Wabash Portland cement company was organized 25 years ago and is incorporated for $1,500,000.

Start New Cement Plant at Redwood City

Actual construction work on the first two units of the $14,000,000 plant of the Pacific Portland Cement Company, consolidated, that is to be built on the Redwood City water front, was started recently. The Foundation Company of New York that has the contract for the building of the immense kilns that are to be used in the manufacture of the cement, has a large force at work. Duncan & Harrelson of San Francisco, who had the contract for driving the piles for the foundations, completed this work and everything is now in readiness to go ahead with the construction of the plant proper. The work will be rushed as rapidly as possible, fully 500 men being employed continuously until the plant is ready for operation the first of August. The materials to be used in the construction work and also the machinery for the manufacturing of the cement have begun to arrive.

Palmer & McBryde have completed the work of constructing the embankment for the wagon road from the foot of Chestnut street to the water front, and the Southern Pacific Company started this week the laying of 85-pound standard rails that are to take the place of the lighter rails on the spur track that runs to the plant.

Plans for extensive improvements to the channel leading to Redwood creek from the bay are now being laid by the owners of the Pacific Portland Cement Company. The aid of the Federal Government in paying a part of the cost of this improvement is being sought, the other part to be met by the cement company and others interested in the development of the local water front. It is felt that in view of the big showing that has already been made by the company there will be little difficulty in securing the aid of the Government in this work.

The Memphis Lime & Cement Co., of Shelby County, Tenn., has been incorporated for $50,000 by Henry Wurzburg, Herman Harris, Blanche Wurzburg, W. T. McLain and L. D. Bejach.

Following Bad Debtors from Town to Town

I HAVE from a Western association, through one of the papers that regularly publish these articles, a request to advise them how far an association of merchants can go in following up delinquent debtors who pass on to another town leaving unpaid debts. Here is the inquiry:

Some of our associations are considering the matter of establishing a reporting service to keep the members advised on delinquent debtors who move from one location to another. The proposition which has received some consideration at several of the conventions of dealers this season involves a service by which the names of men who remove from one locality to another leaving unpaid bills in the hands of dealers be reported to dealers in the community into which they move. It was stated that irresponsible persons in some cases have made a number of changes in residence and contracted bills which they did not pay. The proposition as discussed was that the associations could render a valuable service to members by keeping them posted and thus, in effect, warning them not to trust the "skippers," as they were termed by a speaker at one convention. This, of course, would be a service worth while, but before inaugurating it we think it would be well for association officials to investigate for the purpose of ascertaining the way in which it can be done without raising the question of "doubtful legality." For if the writer's memory is not at fault, there have been cases in court involving this form of reporting delinquent debtors. Associations in some lines, as we recall it, went too far in this activity, or they chose methods which were alleged to be contrary to law. We have no doubt there is a way in which the service can be rendered effectively and legally and that is the way the associations must choose if they decide to undertake the service. I think you have written on this subject in past years, but nothing recently, and I wonder if it would not be worth while for you to write an article setting forth just how this reporting can be done without violating any law.

The offense which could be charged in such cases, if any were charged, would be libel. Consider the case of a buyer—he could be either a consumer buying from a retailer, or a merchant buying from a jobber or manufacturer—who leaves town owing a bill or bills. Check is kept on his movements and everybody knows it when he finally locates in another town and possibly prepares to victimize somebody there. Obviously it would be highly useful if the merchants or jobbers of that town could be told to look out for this pilgrim, but doing the telling legally is a thing that requires consideration.

There are perfectly legal ways, however, of giving such information. For instance, suppose the delinquent buyer applies to somebody in his new town for credit. Suppose the dealer asks his mercantile agency for information and gets a report somewhat like this: "John Smith, formerly in the ———— business at Smithtown, Va., from which he has recently removed, is reported to have left that town without settling all of his obligations. In Smithtown he is reported to have been considered a doubtful credit risk." If the statements made are true, or even if not true, if they are made in good faith, everything is legal.

Or if the dealers in the town to which John Smith has gone have something like a State credit bureau, they can write to it for the same information and receive it, and after receiving it use it as a reason for refusing John Smith credit. That also will be legal, because under the law unfavorable credit information given to merchants asking for it for a proper purpose of mercantile associations or agencies, is not libel even if it isn't true—provided it is gathered and disseminated in good faith.

But what the authors of the present inquiry want to do is a little different from this, if I understand them. After they have found out that John Smith has settled in Boonville,

they want to send the merchants of Boonville a message: "John Smith, just located in your town, is a dead beat. Left here owing several bills. Look out for him." To the end that the Boonville merchants will turn Smith down when he asked for credit, as of course he would do.

That plan presents legal difficulties.

As a matter of fact, I know of no decided case which has ever settled this question, viz.: would all the business men of Smithtown acting together be guilty of a conspiracy if they notified all the merchants of Boonville that John Smith, recently moved there, was a delinquent debtor. Some courts would undoubtedly say it was, but I believe the weight of opinion would be that it was not libel, and that the Smithtown merchants had acted within their legal rights. Nevertheless, at the present time the question is an open one. I do not advise that it be done in any such way, though I personally believe such a course to be legal.

I can suggest a way in which the desired result can, in my judgment, be accomplished with perfect legality, although it may not be quite as direct as the way which these inquirers would like to take.

Let us say that John Smith moves from the town or city where he has been living, owing bills. Naturally his creditors will soon learn of his departure, and should know where he has gone, but the plan I am about to suggest will work even if they don't know where he has gone. The merchant who has been defrauded by John Smith's leaving simply certifies Smith's name to his local or county association, together with the amount of the unpaid bill. The local association certifies it to the State Association and the State Association certifies it to all other local associations throughout the State. If the members of the latter have been educated to call up their association secretary before they grant credit to any stranger, you can see that John Smith's delinquency will quickly travel to where it will do the most good. The plan could be very simply and easily worked, the notices being given on postal cards through a little code system. It will succeed if the town or county where John Smith has gone has an association.

What I have said primarily fits cases where a delinquent debtor moves to some point within the State. The same plan could be made an interstate affair by arrangements among the different State associations.

Could the association at Smithtown legally send such information direct to the association at Boonville after they learned that John Smith had located there? I think it could, provided it was sent merely as credit information disseminated for the general good of the trade by an association partly organized for that purpose, and not in pursuance of an agreement among the members of the two associations not to give credit to anybody who had defrauded another member. The latter would undoubtedly be a conspiracy.

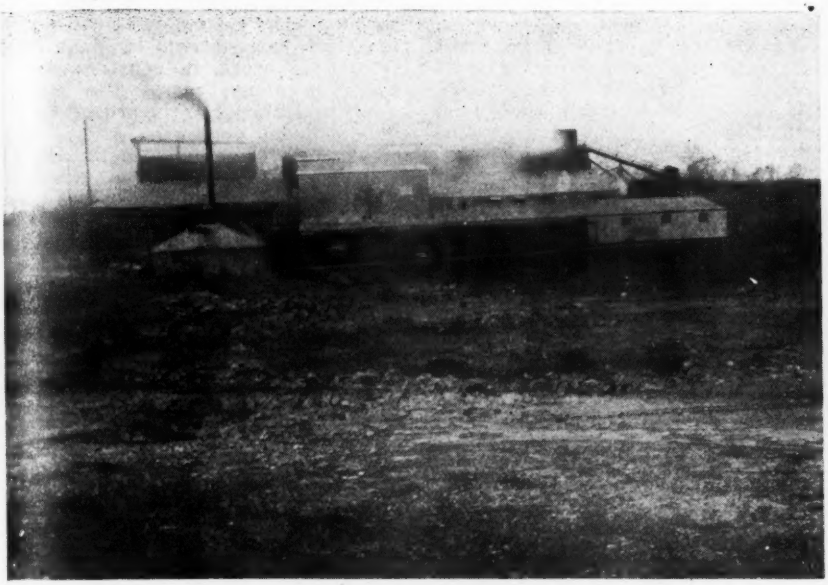
(Copyright, March, 1924, by Elton J. Buckley, Esq., 643 Land Title Building, Philadelphia, Pa.)

A Correction

On page 96 of Pit and Quarry HAND BOOK for 1924, we credited to E. C. Eckel four extracts from Geo. B. Massey's "Engineering of Excavation." These extracts should, of course, have been credited to Mr. Massey in the PIT AND QUARRY HAND BOOK and we wish at this time to draw attention to our own error. The mistake occurred in the mechanical makeup of the book.

The extracts referred to are composed in each case of the text and tables on Shovel Bail Pull, Orange-Peel Buckets, Clamshell Buckets, Coal and Water for Steam Shovels, Size of Steam Shovel Boilers. Mr. Massey has done considerable work along the lines suggested by these titles and is at the present time devoting his energies to this field as vice president of the Randolph Perkins Company, 1210 First National Bank Bldg., Chicago, Illinois.

A 52-acre tract of land lying off the Cincinnati pike near Dayton, O., has been purchased by the Moraine Sand Co., for $35,000. The sand taken out of this land will be used in the manufacture of its products, plaster brick, asphalt brick, and other building materials.



Lime Plant of the Evans Lime Company.

Modern Plants Rising from Ashes of the Old

For Many Years Producers of Rock and Hydrated Lime, the Evans Quarries Have Rebuilt One Entire Plant and Added to the Other.

OVER IN THE little Ohio town made famous a few years ago by Warren G. Harding and his "front porch" orations is located one of the honest-to-goodness stone crusher and lime burning plants of Central Ohio.

For many years past Daniel Evans and his brother John Evans have been operating their dual industry here on the outskirts of Marion, the one, Daniel Evans, being owner and manager of the stone producing and crushing plant, while John Evans is manager and owner of the big lime plant.

The Evans brothers have long been pillars of the community. Daniel Evans, driving his visitor on a sight seeing trip uptown past the Harding home and to the vault in the cemetery where lies the body of the former president, brought him presently to his own beautiful stone residence. This home is built all of carefully selected mottled stone taken from the Evans quarry, and a most artistic piece of masonry it is. Later he showed him also John Evan's home.

The Evans Quarries

The Evans quarries are big operations, the land owned by the two companies,—the John Evans Lime Company and the Daniel Evans Stone Company—totalling 60 acres. Viewed in perspective, the quarry operation presents an extensive picture of blasting and hauling, which is but natural since it has been carried on for more than a generation past. The stone found here runs about 24 feet in depth. This is a hard blue limestone which varies considerably in color and quality, and is used for ballast and road work. There are also about 20 feet of excellent fluxing stone.

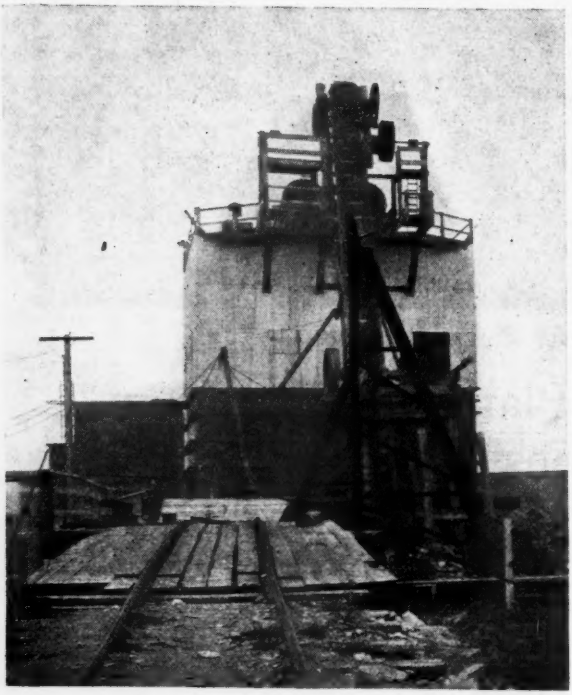
The two plants are located perhaps a quarter of a mile apart. From the

lime plant on the right—as shown in the illustrations—tracks thread their way across the worked-out quarry bottom to the freshly broken stone where men are busy with electric and jack hammer drills, preparing for further dynamiting.

The Stone Crusher Plant

From the stone crusher plant on the left runs a neatly planned and efficient "loop" track system where several trains of cars drawn by industrial locomotives work in constant alternating harmony, carrying a steady supply of material to the crushers outside the stone plant.

The point of interest in the Evans setting is the fact that a complete new plant is being built,—or has been built, since the writer was on the ground last fall—this new building being constructed wholly of steel to replace the old wooden structure which was destroyed last summer by fire. The loss from this fire is estimated at from $35,000 to q40,000.



View of Evans Rock Crusher Plant.

Lime Plant and Hoist, Evans Lime Co.

In the old plant a hoist was used, with belt buckets for conveying the material. The fire, costly as it was in wiping out the entire plant and causing the loss of most of the season's work and profits, at least left the road clear for improvement in the arrangements of crushers and the system of handling the materials.

There is no hoist in the new plant, and instead of belt buckets they have installed steel bucket conveyors which convey the crushed material up to the screens at the top of the building. Furthermore, instead of locating the big primary and secondary crushers in the plant itself the management has placed them outside the plant. Here at the top of the gentle rise which constitutes the track approach from the quarry they have located the crushers underneath the grizzlies, which are located directly between the tracks.

Thus, a trainload of cars loaded with stone is hauled from the quarry by locomotive

power up to the plant and dumped into the grizzlies. While one cut of cars makes its way about the farther side of the loop, and up to the grizzlies, the empty train is backing down into the quarry and taking on a new load of material.

The new plant will have a daily capacity of from 1,200 to 1,500 tons per day, and will have eight bins with 500 tons total capacity. The sizes of crushed stone produced run as follows: Nos. 1, 2, 3, 4, and 7.

The new crushing equipment consists of the following units: One Traylor No. 18, one Allis-Chalmers No. 7 and one Allis-Chalmers No. 6.

The screens used are as follows: Two Allis-Chalmers 48-inch by 20-foot screens and one Jeffrey 60-inch by 12-foot "scalper" screen.

The two conveyers used are a Jeffrey, size 42-inch by 65-feet and 32-inch by 72-feet.

The hauling equipment ofthe stone crusher plant consists of 6 Western side dump 5-yard cars, and two American locomotives, one 5-ton and one 7-ton. A Jeffrey electric loader is also used.

One Loomis electric drill is used, and various. Ingersoll-Rand Jackhammers and a Tripod.

The shovel employed is an Osgood 43. This is to be replaced soon by an Osgood 73.

The individual motors used in the old plant have been discarded, and a one-line shaft installed in the new plant, with 440 voltage,—200 horsepower.

The total loss suffered from the fire, which it is believed was caused by straggling I. W. W.'s who were passing through town at the time the fire occurred, was placed at between $35,000 and $45,000. The cost of the replacement complete is estimated at about the same amount.

Clyde Hydrator at Evans Lime Plant.

Rock Crushers and Plant Approach, Evans Stone Crushing Plant.

The Lime Plant

The plant of the John Evans Lime

Company consists of ten lime klins of about 2,500 bushels per day capacity.

The outstanding feature of interest about this plant is the hydrating building which was put in new last spring. This building, which is of all-steel and concrete construction, was built by H. Miscampbell. The brand of lime produced here is the Diamond brand. The capacity of the hydrating plant is from 60 to 80 tons per day.

A Corner of the Evans Stone Quarry.

The equipment of the Evans lime plant consists of one Thomas electric hoist, operated by a 2,500 horsepower General Electric motor; a Sturtevant No. 3 grinder; a Raymond separator.

The sacking is done by a Bates Four-Tube Automatic Sacking machine, which is powered by a General Electric motor.

The fuel used in the lime burning is coal.

As shown in one of the accompanying illustrations, the cars of loaded material are hauled on rails from the stone quarry by donkeys. At the foot of the incline to the plant the cars are attached to the Thomas Electric hoist and hauled to the kilns above.

This seems a slow and old-fashioned method of hauling, but it is no slower than the methods used in other lime quarries in view of the necessity for careful hand selection and loading of the material to be used.

Work All Year 'Round.

Both in the lime plant and the stone crushing plant regular production is maintained throughout the winter, excepting only when the weather is too severe for operations in the stone crusher plant.

About 80 men are employed in the two plants the year 'round, 40 men in each.

The Consolidated Materials Corporation of Rochester, N. Y., has purchased the entire plant equipment and about 300 acres of sand and gravel deposits of the Continental Products Corporation, one of the big sand and gravel concerns in that part of the state. This combination results in one giant corporation which will produce a million tons of sand and gravel annually.

The Basalt Rock Company, Inc., of Napa, Calif., is building one of the largest crushed rock producing plants in the west, in the hills near the Napa State Hospital. It will be completed next June. The big crushers and equipment for the tramway system, to cost $150,000, are now on the way.

A. C. Bellows, who has for some time been in charge of the business and construction work of the Lakeside Lime Co. of Lakeside, Calif., with a factory on the Eucalyptus ranch, has sold his interest in that concern to W. A. Meyer and retired. Mr. Meyer states he will develop the granite side of the business, making the production of carbonate of lime more a side line.

The Western Lime & Cement Company are enlarging the crushing capacity of their High Cliff, Wis., plant. rial 400 feet on a belt from the quarry level to the storage bins.

At their plant at Quarry, Wisconsin they are building two new kilns to take care of the increased demand for the high grade of lime produced. They are also considering installing a conveying and loading apparatus for this plant.

The Grays Harbor Cement Products Company was incorporated at Aberdeen, Washington, with capital stock of $20,000, by F. G. Howard, W. F. Paddock and Earl Bracken.

Magnesite a Product Not Yet Standardized

THE enormous increase in the production of magnesite in the United States during the last ten years is significant. By locating the sources of supply of many raw materials and providing the means of producing them for manufacturing into finished products, we are rapidly becoming independent of foreign countries. Formerly we depended on Austria, Greece, Italy, Norway, India and Canada for magnesite. Now we have our own resources. California and Washington are rich in this product and produce a quality far superior to that secured from other countries. The next five years will undoubtedly see an enormous increase in the output of this mineral for which there is an increasing demand. Foreign magnesite has been available at a lower rate than our own domestic product. This is due to the fact that freight rates have been so high that it has not been practicable to supply the eastern markets from the western states. Cheap labor in foreign countries and low ocean rates have lead to the use of foreign magnesite which is in reality an inferior product. Our domestic magnesite must be protected because of its superior quality and its value to the steel, copper and building industries.

The presence of iron in the foreign magnesite makes it especially adaptable for refractory uses while the more pure domestic product is more suitable for plaster purposes. We have iron in this country which can be added to the native material to produce a refractory product equal to any of the imported.

Magnesite is carbon of magnesia shown by the formula ($MgCO_3$). When theoretically pure, it contains 52.4% carbon dioxide and 47.6% of magnesium oxide. As found in natural formation, it contains clay, lime, silica and oxides of iron. It is a dense, white, massive material resembling broken porcelain, rarely showing any crystalline structure. The material usually occurs in extensive veins although it has been found as a local outcrop and as loose surface rock. In general, it must be mined. Often this can be done in open cut and with the simplest methods of hand labor. It has a specific gravity of 3 to 3.12. A cubic foot of solid material weighs about 190 pounds.

It was in 1853 that Sorel discovered that a hard cement could be secured from a mixture of zinc oxide and zinc chloride. The term Sorel cement does not now apply to this mixture but to a mixture of magnesium oxide and magnesium chloride. In 1870 Bender published the first information on the chemical composition of magnesia cement.

The magnesite pits in California offer interesting examples of the process which is used after the ore is quarried or mined. It is broken into lumps and calcined in vertical or rotary kiln. This drives off the carbon dioxide. It is important that the temperature be such that there is no loss due to over or under heating. As a rule two and one-third tons of natural magnesite will produce one ton of magnesium oxide. If the calcination is accomplished with a moderate temperature, the result is that from 3 to 8% of the carbon dioxide is left in the residue. Then the calcined product resembles caustic lime and can be combined with such reagents as magnesium chloride. This quality accounts for its use as magnesia cement.

Magnesite that is intended for cement is usually calcined at a temperature between 1300 and 1700 degrees F. The exact temperature depends largely upon the nature and amount of impurities present. Lime, silica, iron, aluminum oxide, and sulphur are the important impurities. If there is a large iron content, a lower temperature is required; if a low iron content, a high temperature is required. A substance known as dead burned magnesite is obtained when the mineral is calcined at a temperature of 2700 to 3100 degrees F. This dead burned magnesite is more important commercially than the caustic calcined magnesium since it can be

used as a refractory material for fine brick, furnace and crucible linings, etc. It is a dense fire resisting substance which will not slate. It will not combine with chemicals for use of cement, however. The calcined magnesite is ground fine usually with millstones so that less than 10% will be retained on a 120 mesh sieve.

To prepare magnesia cement, materials are combined by mixing magnesium oxide with dry aggregate, then adding a solution of magnesium chloride. It is possible to add the aggregate after the semi-fluid mix of cement and the solution has been secured. The magnesium oxide and magnesium chloride may be mixed in dry form and the water and aggregate added at any time. This method is not to be recommended, however. The place that this product has made for itself in the building industry is extremely interesting.

Magnesia cement has a number of qualities that render it invaluable as exterior stucco. This stucco is a compound of calcined magnesite, asbestos fibre, white or brown sand and brown silex. The proportions used vary considerably according to opinions held by the different manufacturers since there is no special standard in use by the industry at large. It will adhere to all materials and it is free from expansion or contraction after setting. It is not influenced by change of temperature, by water or by disarrangement of the structure upon which it is placed. Hence its durability is remarkable. It is fire resisting to a large degree. There is neither cracking nor infiltration of air where magnesia cement stucco is used. It may be applied to any form of solid surface such as wood laths, steel laths, sheeting board, brick, hollow tile, stone, etc. There are many possibilities in the way of finish such as smooth finish or pebble dash finish. It may be colored easily and effectively. It can be used in any kind of weather but should always be applied to a dry surface or to one sprayed with a magnesium chloride solution.

As flooring material, magnesia cement is superior. It has qualities similar to those found in horn. It can be planed, drilled, scraped and varnished. It is elastic and does not disintegrate by impact. It can be colored and laid in patterns. Parts of floors can be replaced by this material. It can be applied to a wooden foundation.

The next ten years will bring developments of this product in many directions which cannot be even anticipated at this time. The product is not yet standardized, however, and this will be necessary before much further progress can be made.

U. S. Gypsum Very Prosperous In 1923

According to the annual statement of earnings of the United States Gypsum Company this concern enjoyed marked prosperity last year, the result of the countrywide building boom.

Net earnings for 1923 were $6,848,942, a gain of more than 50 per cent over 1922. Net income, after deductions for depreciation, taxes, and an item of $500,000 for contingencies, was $5,030,922, and after payment of preferred dividends there was a balance of $4,609,744 available for the common stock. The average common stock outstanding during the year was approximately $4,904,000, so that earnings were equivalent to about 94 per cent, or $19 a share, on the $20 par value common stock.

$3,429,254 Added to Surplus

The common stock outstanding at the end of 1922 was $4,431,040. A 10 per cent stock dividend was paid in January last year and a 20 per cent stock dividend was paid late in December. The issue at the end of 1923 was $5,911,680. Even on the increased common stock issue net earnings for last year were equivalent to $15.60 a share. Surplus at the end of 1923 was $9,045,049, an increase of $3,429,254 over 1922.

Furthermore, expenditures on plant, etc., totaled $2,088,507. Current assets total $9,881,361, an increase of $3,982,870, while current liabilities are $1,958,842, an increase of $89,642.

President Sewell L. Avery said the agreement for consolidation of J. B. King & Co. calls for giving $3,000,000 of preferred and $500,000 of common stock at $20 par value for the $5,000,000 par value stock of the King company.

View Showing Track Full Length.

Crow Creek Gravel Company Using Ingenious Device

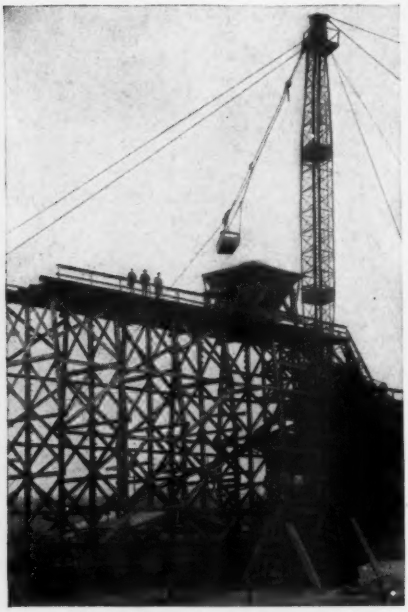
THAT there is no limit to the opportunities for inventive genius is constantly being proved. Two of the officers of the Wolf River Sand Company have devised a most valuable movable hopper arrangement which is being used by the Crow Creek Gravel Company, Madison, Arkansas to facilitate operation of a slack lime cableway excavator over an unusually wide angle.

The movable hopper, as will be noticed from the accompanying pictures, is installed on a high trestle alongside the bin structure. This hopper is mounted on car wheels and travels on a track laid from end to end of the trestle. A conveyor belt also runs the length of the trestle and carries the material from the hopper to the screens. One man is needed to regulate the feed from the hopper onto the belt.

Now let us explain why the movable hopper system is better suited than the fixed hopper for the peculiar conditions of the Crow Creek Gravel Company's proposition.

This plant is located on the bank of Crow Creek, which is a rushing torrent during the high water periods and subsides in the dry seasons to a tiny stream trickling down the middle of a bed about 400 feet wide. This stream bed contains gravel to an average depth of 20 feet, which is excavated and conveyed to the plant by a 1000 foot span, 1½ cubic yard Sauerman Slackline Cableway Excavator. Taking into consideration the length of span, the size of the bucket, the shape of the deposit, and the shallow depth of the material, it is apparent that the line of operations of this cableway will have to be shifted with abnormal frequency, and that the efficiency of the equipment will depend largely on

whether the cableway can be swung rapidly up and downstream from the plant. With the movable hopper, the angle of operation can be shifted anywhere within a radius of approximately 180 degrees and the hopper spotted immediately at the point where the new line of operation crosses the trestle. Thus, approximately 500,000 square feet of the creek bed is within range of the cableway without moving the mast, and as the gravel supply is at least partially replenished each year during the spring freshets, the cableway should continue to operate at this same location for many years.



View Showing Trestle.

It will be noticed from the photographs that the cableway mast is of steel construction. This is a Sauerman standard 100-ft. steel mast, and a story could be written about this in itself, if space permitted. Use of this type of mast is a relatively new factor entering into the designing of the larger size cableways.

The screening equipment is a 48-inch Telsmith heavy duty washer which separates the material into sand, ⅜ inch gravel, and 1½ inch gravel, the oversize being chuted outside the plant. This oversize has been piled at one side of the plant, but a Telsmith crusher is now being installed to reduce the rejects to a size that can be utilized.

Material passing the screens is stored in 20 ft. x 46 ft. bins, from which it is loaded into railroad cars. Most of the product is shipped to Memphis, Tennessee. The whole plant is operated by eight men, in addition to four employed temporarily on a track gang, has an average capacity of 450 cu. yd. a day, and is capable of a maximum production of 60 cu. yd. an hour, which is very satisfactory, considering all conditions.

The plant was installed in 1923. The operating company is affiliated with the Wolf River Sand Co., which also operates a Sauerman Cableway at Memphis. In fact, V. A. Cordes, president of the Wolf River Sand Co., and James H. Griffith, vice-president, are responsible for the ingenious scheme of the movable hopper.

Strikes and Lockouts

Decreasing strikes and lockouts in the United States would be beneficial to all persons concerned. In 1923 the American public, employees and employers, paid seven hundred million dollars for strikes and lockouts. Twenty million working days were lost. Employers were affected to the extent of twenty-six million dollars and the employes to the extent of ninety-seven million dollars. The public suffers from these conditions, the loss in 1923 being estimated at more than five hundred million dollars.

Some statistics made on the eight years from 1916 to 1923 show that the entire loss to the public including employees and employers exceeded twelve billion dollars with a loss of over four hundred million working days. Employers lost over four hundred million dollars and employees over a billion. These facts are startling and should be convincing to all concerned that every possible means should be used to prevent such waste. Industry suffers, production is hampered and progress is checked. All efforts to avert such situations are commendable and those who make them are working to the best interest of progress.

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A Haiss Truck Loader does make money for the big operator, but you men who get out 40-50 yards a day over 100 days a year need one just even more.

The Loader will pay for itself out of payroll money you save. And remember, it loads so much faster that you keep your trucks moving faster, deliver more loads per day—you either do more business or lay up one truck. Think it over—

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A Haiss Truck Loader is the only machine at anywhere near its price that will dig and load bank sand and gravel efficiently. The Haiss propellers, slow-speed "Crowding" against the bank, and the powerful digging of the toothed buckets do the trick. Full 37 H.P. to handle heavy digging. Creeper treads—no planking.

Catalog 523 tells about this labor and money saving machine.

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The Nobles Gypsum Co., of Buffalo, N. Y. write:

"Our Plymouth 7 ton Gasoline Locomotive is hauling an average of 500 tons per day, approximately two miles, with a 1½ per cent grade. We are saving from $25 to $30 a day in switching charges alone, and the Locomotive is giving us very good service."

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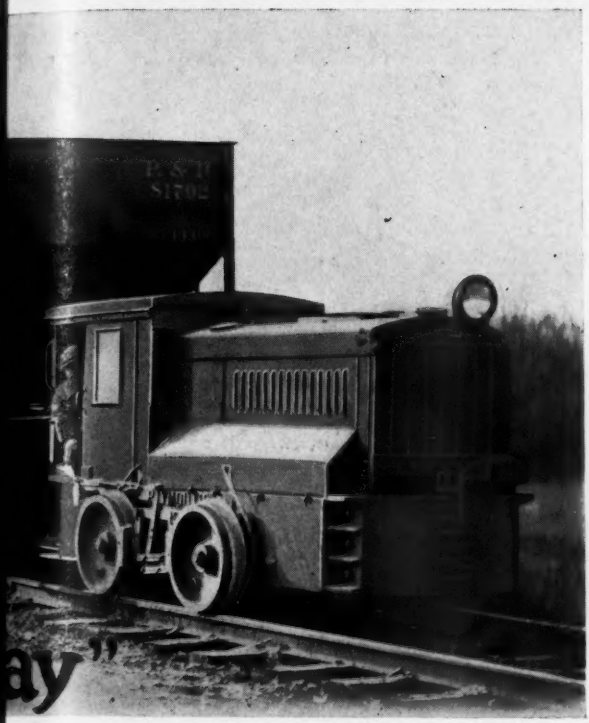

If, in your opinion, your haulage is slow and expensive, ask us for literature and give us the opportunity of discussion and suggestion, without any obligation on your part.

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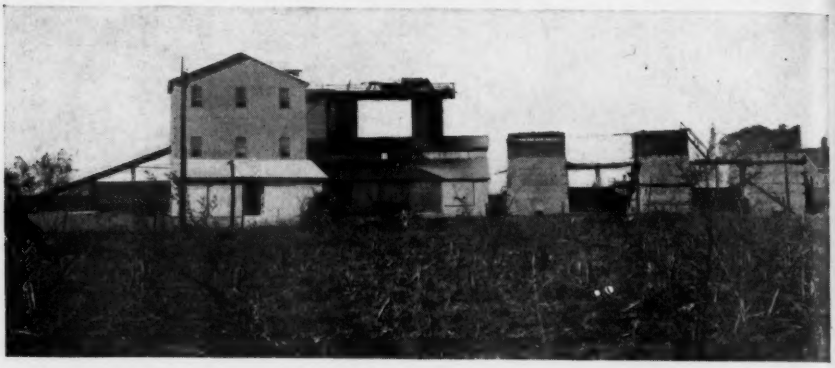


Side View of Abel Magnesia Plant, Showing the Two New Steel Kilns.

Modernizing a Lime and Stone Producing Industry

How the Abel Magnesia Company Has Replaced Its Old Kilns with Modern Steel Kilns and Is Prepared to Continue Operations for Many Years.

ONE OF THE big limestone quarries of Central Ohio which has been producing both crushed stone and lime for many years past is the Abel Magnesia Company of Cedarville.

The age and years of service rendered by this plant are easily seen in the accompanying picture, which shows the old square stone kilns, used in earlier days. As can be seen, these old kilns have been abandoned, and only the two new steel kilns to the left are being used.

Since the picture shown was taken, —which was last October—no doubt the contemplated plans of building two additional steel kilns have been carried out. At the time, however, the normal capacity of from 60 to 80 tons in 24 hours was not being maintained owing to the handicap of having only the two-kiln equipment. The capacity per ten hour day, therefore, averaged only about 40 tons at that time.

Lime Plant and Stone Quarry

The Abel Magnesia Company, of which Carter N. Abel is president, owns 23 acres of quarry land at Cedarville. Further evidence of the company's past record for production is apparent at once to the visitor, for the operation reveals a great worked-out stretch of quarry bottom. This appearance is misleading, however, for there is still much good stone left, and the management plans, when the upper quarry reach is exhausted—which is still some time in the future—to go down into the quarry bottom another 23 feet or so over the entire quarry.

This upper reach consists of two benches. The stone from the upper bench goes to the stone crusher plant; the lower bench stone being cleaner and purer, is used in making lime.

As is often the case in lime quarries, the Abel Magnesia Company operates both a lime burning plant and a stone crushing plant. These two industries are separately operated, and each is separately housed in completely equipped, up-to-date buildings. Owing to the period of slack production, only about 23 men were being employed in the two plants last fall, but under full capacity production a much larger force is employed.

The lime hydrating plant, whose capacity, as already stated, is 40 tons

of hydrated lime per 10 hour day, or 80 tons per 24 hour day, was designed by H. Miscampbell of Duluth, Minnesota.

Owing to the fact that only two of the old kilns have been replaced with new steel kilns the plant did not present so long or complete an array of furnaces. However, the production of hydrated lime is steady at the rates given above.

The hydrating building is equipped with one No. 3 Miscampbell hydrator, weighing hoppers and feeding hoppers. There is a Sturtevant "O" crusher, powered by a Westinghouse 20 horsepower motor an elevator, carrying to the storage bins, operated by a Westinghouse 5 horsepower motor.

How the Lime Is Made

The limestone, which from the first loading operation in the quarry, has been carefully hand picked, drops through the Miscampbell weighing hopper into the Miscampbell hydrator. From the hydrator it goes to the storage bin below, then through the feeder and Caldwell screw conveyor to the "O" Raymond pulverizer.

The material is then elevated by fan to the dust collector and to the top floor, (third floor) and the storage bin and then down to the Bates 4-valve Automatic Bagging machine.

Dumping Stone Into Kiln of Abel Magnesia Company.

The lime kilns, which are adjacent to the hydrating plant, were made by the Stacey-Schmidt Mfg. Company of York, Pa. These kilns are of steel, 50 feet high and 11 feet in diameter.

Rock Crusher Plant, Abel Magnesia Company, Showing Dump Cars and Engine.

The lime as it comes from the quarry is carried to the kilns on a steel incline, by a Thomas hoist, 36 gauge rails, the incline erected by

Clyde Hydrator at Abel Magnesia Plant.

Champion Bridge Company of Bloomington, O.

Old homemade wooden side-dump cars were in use last fall in hauling the stone, although ten new Koppel 2-yard side dump cars had already been bought and are now in use.

The stone quarry operation of the Abel Magnesia Company is well equipped with machinery. First of all, an Erie B ¾-yard shovel is used in taking the 18 to 24 inches of stripping off the top of the soil. Hauling of stone to the crusher plant is done in Austin 2½-yard all-steel end dump cars, of which the company has ten. These are hauled by a Plymouth 3-ton locomotive.

A Keystone well drill is used in preparing for blasts, also a Loomis Clipper drill, both operated by gasoline. Several Ingersoll-Rand tripod and jackhammer drills are used.

In the plant a Kennedy No. 6 crusher is used for primary crushing, and an Austin No. 3 for recrushing. Austin conveyors carry the material through the various processes from crusher to screen, etc.

An Austin 16-inch by 4-foot revolving screen does the primary screening. Sizes of materials produced are all sizes up to Nos. 1 and 2.

All equipment in the crusher plant and the air compressor is operated by a Vertical Foos 3-cylinder 150 horsepower gas engine. The company furnishes its own electric power by means of a Watts-Miller 200 horsepower twin cylinder, which drives a 180 K.W. alternator, 60 cycle 3 phase, of 440 volts.

The daily capacity of the Abel Stone crusher plant is 500 tons of crushed stone. The available storage bin capacity is 5 cars.

The stone produced is a dolomitic stone, high in magnesia (44 per cent magnesia is the actual analysis given). This product has both a local and distant distribution, much of it being hauled away by truck for local use, and much shipped by rail cars from the plant's storage bins.

A large quantity of this material is also shipped to steel mills where it is used as basic refractories.

Indications In the Hoosier State

Reports coming into the office of the Indiana Sand and Gravel Producers' Association from all over the state indicate prospects for a good year in our industry, says Jesse A. Shearer, secretary-treasurer of the Association.

The setting aside of the automobile license law has indirectly affected our business for this year owing to the fact that a very large amount of revenue, which would have enabled our State Highway Department to carry out a very extensive program, has been curtailed by this action.

There will be, however, a considerable amount of state highway work in Indiana and this, together with the county work and the private and municipal work throughout Indiana, should afford us a good season.

Portland Cement in February, 1924

The statistics shown in the following tables issued by the Department of the Interior, are prepared under the direction of Ernest F. Burchard, of the Geological Survey, are based mainly on reports of producers of portland cement, but in part on estimates. The estimates for February, 1924, were made necessary by the lack of returns from two plants. Production showed a slight decrease, as might have been expected in view of the highest recorded accumulation of stocks and the short month. Shipments showed an upward trend as compared with January, an encouraging evidence of early spring demand.

Production and shipments of finished portland cement, by districts, in February, 1923 and 1924.

Commercial District	Production, February		Shipments, February	
	*1923	1924	*1923	1924
Eastern Pa., N. J., and Md.	2,128,000	2,600,000	1,229,000	1,361,000
New York	345,000	276,000	154,000	129,000
Ohio, Western Pa., and W. Va.	742,000	708,000	550,000	461,000
Michigan	325,000	314,000	268,000	247,000
Ill., Ind. and Ky.	1,522,000	1,276,000	1,014,000	752,000
Va., Tenn., Ala. and Ga.	465,000	753,000	425,000	633,000
Eastern Mo., Ia. and Minn.	880,000	921,000	837,000	572,000
Western Mo., Neb., Kan. and Okla.	517,000	403,000	416,000	436,000
Texas	312,000	363,000	251,000	268,000
Colo. and Utah	81,000	85,000	89,000	117,000
California	702,000	745,000	767,000	818,000
Ore., Wash. and Mont.	191,000	144,000	90,000	139,000
	8,210,000	8,588,000	6,090,000	5,933,000

*Revised.

Production and shipments of finished portland cement, by months, in 1923 and 1924, in barrels

Month	Production		Shipments	
	1923	1924	1923	1924
January	*7,990,000	8,788,000	*5,628,000	5,210,000
February	*8,210,000	8,588,000	*6,090,000	5,933,000
March	9,880,000	.....	10,326,000	.....
First quarter	26,080,000	.....	22,044,000	.....
April	11,359,000	.....	12,954,000	.....
May	12,910,000	.....	14,257,000	.....
June	12,382,000	.....	13,307,000	.....
Second quarter	36,651,000	.....	40,518,000	.....
July	12,620,000	.....	13,712,000	.....
August	12,967,000	.....	14,971,000	.....
September	13,109,000	.....	13,698,000	.....
Third quarter	38,696,000	.....	42,381,000	.....
October	13,350,000	.....	14,285,000	.....
November	12,603,000	.....	10,251,000	.....
December	9,997,000	.....	6,408,000	.....
Fourth quarter	35,950,000	.....	30,944,000	.....
	137,377,000	.....	135,887,000	.....

*Revised.

The Lee & Van Orman Sand & Gravel Co., Yorktown, Texas, was incorporated for $10,000, by W. E. Lee, C. E. Van Ormand and M. E. Driscoll.

Articles of incorporation have been filed for the Bluestone Sand & Gravel Co., of Seattle, Wash., with capital stock of $100,000 by W. L. Beddow and W. R. Chesley.

Detroit Capital Starts New Cement Plant

The Peerless Portland Cement Company is building in Detroit a modern cement manufacturing plant. The group of men back of the project have bought of the Lowrie & Robinson Lumber Co. a tract of 14 acres hemmed by the River Rouge, West Jefferson avenue, and the Michigan Central switch track on the west side. Here the plant will be built—four and a half miles from the City Hall.

Work already has begun on docks 9,000 feet long to be built of solid concrete. The manufacture of cement will be by the "wet process." Self-unloading ships will bring rock from Calcite, on Lake Huron, 10,000 tons to a ship, and unload the rock at the mill on the Rouge, each ship to require only five hours for unloading.

The plant will have a capacity of 4,500 barrels of finished cement a day, or one and one-half million barrels a year. It is estimated Detroit is using now about 3,000,000 barrels of cement yearly. Engineers' estimates place the cost of the plant at $3,500,000.

Raw grinding will be done in 4 compeb mills 28 feet long and 7 feet in diameter. Slurry will be pumped to 3 rotary kilns, 175 feet long and 11 feet in diameter. Clinker will then be conveyed to 5 compeb mills of the same size as the raw grinding machines and reduced with gypsum to the required fineness. It will then be conveyed to 8 concrete storage silos each 85 feet high and 33 feet in diameter.

All power for the operation of the plant will be developed from the waste heat coming from the stacks of the kilns at 1,200 degrees F. Modern machinery for the allaying of dust, and the conveying machinery will go towards making the plant the most modern known.

The company already operates a plant at Union City, Mich. It will operate both plants, of which the Detroit mill will be the most important.

The president of the company will be Col. William M. Hatch; vice-president, Charles S. Bush; secretary-treasurer, John Gillespie; directors, Garrett W. Patterson, and Robert D. Baker; consulting engineer, A. F. Miller.

Portland Cement Association Changes

The Portland Cement Association announces the opening of a district office in the First National Bank Building, Oklahoma City, Okla., effective March 1, with B. E. Clark as district engineer. The Oklahoma City office will be in responsible charge of Portland Cement Association work in Oklahoma.

Forest Kaufman, who for more than six years has been district engineer in charge of the Kansas City office of the Portland Cement Association, is made district manager of the Kansas City and Oklahoma districts. The Kansas City district comprises Nebraska, Kansas and Western Missouri.

Mr. Clark is a civil engineering graduate of Washington and Lee University, Virginia. During the period 1906 to 1920, inclusive, Mr. Clark served in various railway and mining engineering capacities in Kentucky, Mexico and Oklahoma. In 1920 he was appointed division engineer in charge of the eastern district of the Oklahoma State Highway Department and in February, 1921, was made State Highway Engineer, serving in that capacity until May, 1921, when he was appointed state highway commissioner.

Mr. Clark joined the staff of the Portland Cement Association, November, 1922, since which time he has been association field engineer in Oklahoma.

Batavia Stone Company Now Located in Le Roy

The general and sales offices of the Rib-Stone Concrete Corporation were moved today from Batavia to Le Roy and the concern will occupy offices jointly with the Le Roy Lime and Crushed Stone Company.

The Rib-Stone Corporation builds concrete silos and other cement products, and was organized here three years ago. Donald Woodward of Le Roy has a large interest in the company, in connection with George E. Priest of Batavia, who originally formed the company. A new factory is being built for it.

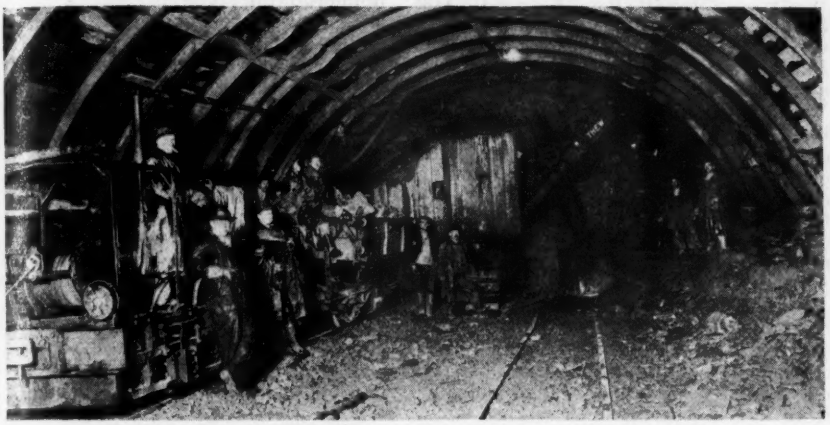


Fig. 1.—Trolley Locomotives at Twin Tubes Traffic Tunnel, Pittsburgh.

Locomotives for Haulage at Pits and Quarries

By H. H. JOHNSTON

General Engineering Department, Westinghouse Elec. & Mfg. Company.

MANY construction companies have, for sometime, realized that much saving in labor, fuel, and scheduled movements, can result by the use of more improved haulage methods for getting their quarried material away from the pit shovels or chutes; and the tendency is to get away from older methods of handling material, which required more time and labor. An item of no small importance, also, is the limiting of the use of the haulage ways to productive work only, that is, using the haulage ways to handle only materials that are needed for the construction work or the quarries, or that is to be taken from them. Many haulage methods not using electricity require that a considerable amount of labor and material, including fuel and water, be hauled over the haulage way. Naturally this not only consumes extra material and labor, but the tendency is to slow up production and it also makes it necessary to get the fuel to the various units that may be scattered widely throughout the construction work or quarries. Just as in most work where electrical power supersedes other power, a great saving alone is obtained by eliminating such items as standby losses, whether these be purely mechanical or manual. These savings have also been shown to be of great importance in construction and quarry work. In the use of steam locomotives the standby losses in keeping up the steam pressures in the locomotive boilers are necessary whether the units are actually in movement or not. Therefore there is a great amount of lost motion in preparing to furnish fuel and water, and in keeping the boilers of the various units up so that they will be ready for service. The use of electrical power centralizes many of these items and much of the saving is obtained right at the source of power supply.

A number of interesting installations of electrical equipment and haulage systems have been made on a large scale. Among these are (2) The Dixie Construction Company work at the Mitchell Dam for the Alabama Power Company, The Niagara Falls Power Company underground waterway at Niagara Falls, N. Y., (1) The Booth and Flinn Company work on the twin tubes traffic

tunnels, Pittsburgh, Pa., (4) The Southern California Edison Company work on the Big Creek No. 3 Power Plant waterway, and (3) The Booth and Flinn Company work on the New York vehicle traffic tunnel. A number of large quarries throughout the country have successfully been using electric haulage systems for a number of years and the tendency is for extensions of their use to many other quarries and pits. The power supply, although not necessarily always used for haulage, is usually 250 volts direct current. It is generated at the power house located on the property being developed or is purchased from a central station supply. In the case of purchased power the transformation from A. C. is made through transformers stepping the voltage down from the line voltage to the voltage required at the motor-generator set or rotary converters. This equipment, together with other transformers and switching equipment for the control of and furnishing of power for other uses than haulage, is localized and usually confined in one building designated as the substation.

In some classes of work the overhead trolley is best, in others the third-rail construction is better, and in other cases the trolley and the third-rail systems are used in different sections of the work. Fig. 2 shows a third-rail construction which has been carried out very nicely and which has been found practical where tracks are shifted or extended as the work progresses. Current is collected from a trolley by the use of a mine type trolley pole or pantagraph; and if third-rail construction is used the gravity type, or the overrunning or underrunning type of spring contact shoes collect the current. Where the trolley pole is used the general location of the trolley wire can be shifted considerably with respect to the tracks without interfering with the collecting of the current. The third-rail construction, also, may be such that variation in the position of the power or third-rail will occur with the variation of the main running rails. Usually, in construction work and in work around the quarries, it is not essential that the erection of either the trolley or the third rail be carried forward at the same time that the main rails are laid as the construction work progresses. Electric motor-driven gathering reels mounted on the locomotive permit the locomotive to operate beyond the end of the trolley or third rail for distances of 500 to 600 feet. The reel carries on its drum 500 to 600 feet of single conductor flexible cable, the end of which is provided with a hook which enables the locomotive operator to hook this on to the end of the overhead trolley wire or power rail and proceed for distances up to 600 feet, paying out the cable as he proceeds. The reel, which is of the motor-driven type, is so designed as to keep the cable taut at all times, preventing more than the required amount of cable to be off the reel at any time and preventing the cable being run over by the locomotive. As the locomotive operates or moves toward the trolley or power rail ends, the cable, which might be considered a flexible trolley, is automatically drawn in and spooled evenly on the drum of the reel. The action of this reel, at all times, tends to keep the cable on the reel.

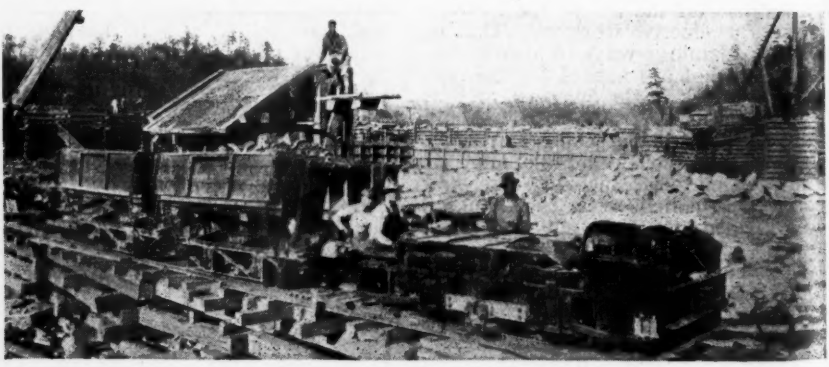


Fig. 2.—Third Rail Locomotives Used by Dixie Construction Company at Mitchell Dam.

The locomotive driving motors, which are of the ball bearing type, are generally of the same construction as for mine locomotives. They are also of the same general construction on all sizes of locomotives, but differ in capacity, depending upon the service requirements. The motors are of the commutating pole type and are suspended in a manner generally similar to motors on railway cars and single reduction geared mine locomotives. Usually the locomotives are controlled

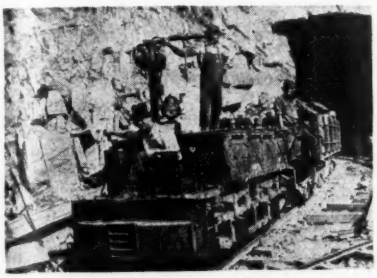


Fig. 3.—In New York Traffic Tunnel.

from a series-parallel or a series and parallel drum controller and the grid resistors are especially rugged for the class of service and have extra capacity to permit a great amount of running on the resistor points for slower speed operation.

The electric locomotive offers numerous advantages over the steam locomotive, which advantages are particularly noticeable in construction work. The increased speed, ease in starting with loads, the absence of reciprocating driving units, and the generally easier and smoother riding qualities of the electric locomotive are among its principal advantages. Because of these advantages alone the electric locomotive can do a very much greater amount of work and requires less attention and less maintenance on road beds and tracks. Inherent in the electric locomotive is the absence of standby losses, and troubles from impure water, leaky flues, and the fire hazard. A considerable saving is effected by eliminating cost of handling fuel and water up to the locomotive. No fireman is required on the electric locomotive and delays from failure to maintain full steam pressure on the locomotive are eliminated. As a result, the electric locomotive is ready at an instant's notice. The electric locomotive requires no power while not actually working and does not require the attention of a hostler to look after the fires under the boiler when it is not actually in use, such as between shifts and over night.

In one of the many installations that have been made, the current used for operating the haulage system is 250 volts D.C. The transmission line from the power company is for 44,000 volts, and at the substation this is transformed to 2,300 volts for the 2,300 volt of the motor-generator set. The use of the motor-generator set then transforms from the 2,300 volt A.C. to the 250 volt D.C. At this particular plant, two motor-generator sets have ben provided, one of which was intended for emergency use. The emergency set, however, has not been called into service. The motor-generator sets are placed in the compressor house and the operation is so simple that only one man is required for the operation of three air compressors and the motor-generator sets.

Figure 1 illustrates the type of locomotive used in the construction of the New York vehicle traffic tunnel by the Booth and Flinn Company, and Fig. 4 illustrates the types of locomotives used by the Southern California

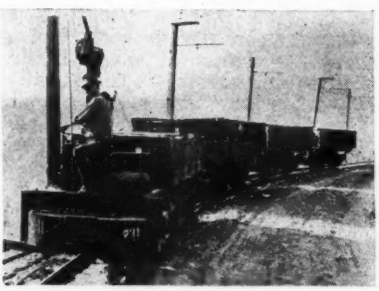


Fig. 4.—On California Waterway Job.

Edison Company. In this last installation 14 new 8-ton combination trolley and battery locomotives were put into service, in addition to six 6-ton trolley locomotives. This equipment has been increased and 7 new 8-ton locomotives are now under construction. Each locomotive carries a 110 cells, 17 plate Hobbs Storage Battery, from which it operates when pulling muck cars to and from the steam shovel at the tunnel heading to the permanent trolleys, which cannot be

brought nearer than 300 to 500 feet from the heading and shovel. The trolley voltage is approximately 268 volts. During operation on the trolley the storage battery floats on the line or takes a charge if the battery voltage happens to be below the trolley voltage. With the present arrangement, it is not necessary to take a battery into the charging station for charge as under normal conditions it receives its complete charge from the trolley when the locomotive is not in operation. The only time the battery is called upon to furnish all the power for the locomotive is while hauling the cars to and from the shovels to the permanent overhead trolley which comes within 300 to 500 feet of the shovels. In the event of a desire to give the battery a further discharge the locomotives are operated for a time with the trolley pole down. Occasionally a battery is found almost completely discharged and it is then taken to a charging station and given a slow rate of charge until the voltage is brought up sufficiently on the battery to make it again safe to charge from the trolley.

Two locomotives are used at each tunnel heading on what is known as the No. 3 Project, and they operate on a 56-pound rail and 36 inch gauge track. The tunnel is 21 feet by 21 feet and the average progress per day is 12 feet. With each foot of progress 19 yards of muck is produced, making a total of 228 yards of muck taken from each heading by two locomotives each day. One yard of loos muck weighs approximately 1½ tons, or a total of 342 tons of muck per day per heading. The distance that this muck is hauled varies according to the distance each heading is in, ranging from 1,000 ft. to 5,000 ft. Each locomotive pulls 2 nine-yard cars from the up-grade heading with an average grade of .003%. The maximum grade is considerably in excess of this on some of the dumps and runs as high as 2% for short distances. Since the locomotives have been in service, absolutely no trouble has been experienced with them either mechanically or electrically.

In a number of cases a careful investigation of the operating cost, first cost of equipment, and cost of installation has been made, comparing electric haulage with other systems, and invariably where large projects are involved or for continued operation such as quarries and pits, a very considerable saving has been shown in favor of the electric system. This saving is becoming more and more pronounced, as cost of fuel and labor are generally on the increase.

The Lubrication of Crushers

A STONE crusher is a heavy well-built machine, massive in design and construction and a new one looks as though it would never wear out, but it will and that quickly if it is not lubricated properly.

The very nature of its work is hard on any machine, no matter how well it is constructed, and in too many cases the wearing parts are neglected. Good grades of oil and grease should be used for lubricating crushers and there should be daily inspection to see that the proper lubrication is given. Grease should be applied in pressure cups as this not only assures ample grease for lubrication but keeps dust and grit out.

It is not only wise to make inspection for lubrication but also to see that the wearing parts and especially bearings are kept in the proper order. This means that bearings must be taken out from time to time and old babbit metal replaced with new. The writer has seen bearings which, owing to failure to put in new babbits, were entirely worn through on the crusher and down into the cast metal so that it was very expensive to make repairs. It is not possible to properly lubricate a bearing on a crusher if the babbit metal is worn out, for hard metal running on hard metal, especially when it is cast iron, is not easily lubricated with oil.

If the proper attention is given to this subject, crushers will last longer and can be operated with less power and more crushed products can be produced.

The New Point Stone Company, New Point, Ind., was incorporated for $30,000 to quarry and crush limestone. Directors are Myron Freeland, Carl E. Brown and Theodore Wanstrath. The company has secured a lease on the Menzie stone quarries, and will install a two-crusher plant.

Conducting Experimental Work at Feldspar Property

THE Gloversville Feldspar Company have over a period of about two years acquired large deposits of feldspar and quartz in the Mayfield hills of northern New York. From an analysis of feldspar and quartz and from the appearance of the veins, it would seem that these occurrences are a continuation of the Canadian deposits.

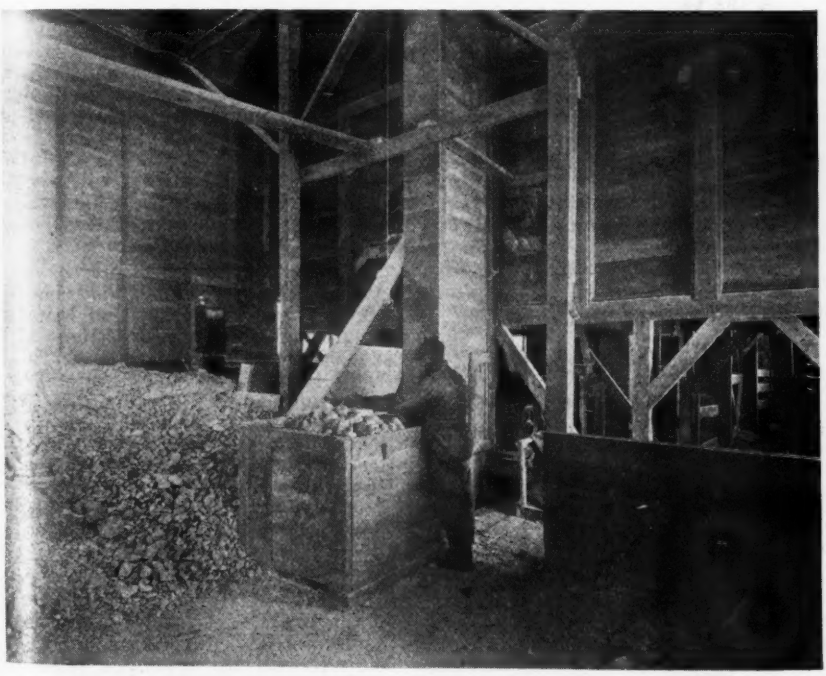
The corporation has a plant on the Fonda, Johnstown & Gloversville Railroad, connecting with the New York Central Railroad at Fonda. The deposits are located about two and a half miles from the mill.

This mill is a small experimental operation to test out a patented process for determining free quartz content of the finished product. This mill has been in operation for about four months and has fully measured up to the expectations of the owners.

Extensive improvements are in prospect. Now that the quantity of feldspar and quartz available has been determined and the process for determining the free quartz content proven, the name of the company will be changed to the United States Feldspar Corporation. This concern will equip the quarries with up-to-date machinery, build an aerial tramway from the quarry to the mill, and lay the ground for the later installations of additional units.

The corporation also intends to install a plant to manufacture stucco dash and chicken grit as a by-product of its feldspar and quartz grinding plant.

Up to the present time the work has been carried on with a Hardinge pebble mill and a Gaco air separator. This plant is electrically operated by power furnished from the Broadalbin



Interior of Experimental Mill at Gloversville.

Power Company, whose high tention transmission line runs half way between the deposits and the mill.

The general manager of the corporation, Mr. C. H. Biddrick, Jr., maintains offices at 170 Broadway, New York City.

Wisconsin Agitates Use of Clean Materials

In spite of the reduction in the Wisconsin highway program by one-third, Wisconsin producers are looking forward to a prosperous season, as the building program for the State will undoubtedly exceed that of last year, says executive secretary N. K. Wilson of the Wisconsin Mineral Aggregate Association. There will be approximately 100 per cent increase in the amount of pavement laid in the various cities and villages.

The market, says Secretary Wilson, is being won over to the use of quality aggregate, a result of the agitation for the use of screened and clean material among concrete products manufacturers. The Wisconsin Industrial Commission is enforcing a building code on the requirements of concrete blocks, necessitating the use of cleaner materials.

It is believed by the secretary's office that, owing to activities and advertising carried on, to convert the many users of bank-run materials to the use of screened and cleaned materials, it is only a question of time until bank-run aggregates will be eliminated entirely.

Portland Cement Plant for Davenport, Iowa

The Linwood Cement Company has undertaken the project of building a new portland cement plant near Davenport, Iowa, and has already raised a large part of the money necessary to carry the work through.

The proposed plant is to be worth $2,000,000 and will secure cement making materials close at hand. These materials have been analyzed carefully and have been reported very favorably.

The work is in charge of General Manager John F. Schroeder.

Portland Cement Association Staff Changes

C. D. Franks, who since June, 1916, has been district engineer in charge of the Association's Indianapolis office, is appointed assistant general manager in administrative charge of Association work in the districts covered by the Minneapolis, Milwaukee, Des Moines, Chicago, St. Louis and Indianapolis offices. Until June 1, 1924, Mr. Franks' headquarters will be the Merchants Bank Building, Indianapolis. After that date his headquarters will be 111 West Washington street, Chicago.

L. C. Miller succeeds Mr. Franks as district engineer in charge of the Indianapolis office. Since February, 1917, Mr. Miller has been Association field engineer in Indiana and during his work in that capacity has acquired a large acquaintanceship in the district of which he now takes charge. The Indianapolis office of the Association, located in the Merchants Bank Building, is in charge of the Association work in Indiana and Kentucky.

A new Association office is open in Charlotte, North Carolina. John E. Tate, heretofore district engineer in charge of the New Orleans office and previously Association field engineer in North Carolina, is appointed district engineer in charge. Until July 1 this office will be located in the Piedmont Building. After that date the permanent address will be the Johnston Building. The Charlotte office will be in charge of Association work in North Carolina.

On March 20 two Ohio concerns were incorporated: the Ohio Excavating Co., of Cleveland, with capital of $20,000, by C. H. Royan, E. E. Thiele, A. R. Bros, C. M. Steckler and M. J. Dickenson; and The Willoughby Sand & Gravel Co., Cleveland, by E. L. Bovas, C. L. Barbran, Margaret Becker, J. W. Bouska and Walter M. Hubbard.

The A. C. O'Laughlin Company, crushed stone dealers in Chicago, has bought 130 acres at 47th and Plainfield, in Lyons township, just outside of the town of Lyons, Illinois, from the Daniel B. Scully estate, for $115,000. It will be developed later for quarry purposes.

Oil Engines for Power In Pits and Quarries

By W. C. CATO, Sales Engineer, The Buckeye Machine Company

Natural evolution in the power field has brought the oil engine into general acceptance as the ideal unit for economical and convenient power production. Fifteen years ago it was regarded practically as a laboratory exhibit, lauded and praised at the meeting of engineering societies, mentioned in vague terms in text books and put down as worthy of inspection on summer trips to Europe, where the oil engine had been demonstrated as a practical and trustworthy prime-mover since 1900. Only in the last decade have we seen big American interests getting behind it in production and use.

A big and practical change has been wrought in the opinions of the engineering world about the oil engine during the last few years (as may be expected from a power fundamentally economical). There is an everspreading acceptance of it as a dependable piece of machinery to the point where large pumping plants, central stations and big industries must take the oil engine into serious consideration. It cannot be ignored on land any more than on sea, for within the last year more than 200,000 H.P. have been installed in ocean going vessels. Henry Ford's recent order for the installation of two 3,000 H.P. oil engines for service in his single screw lake vessels, shows the confidence that large industrial power users have in them.

With the now quite general acknowledgement of the advantages and practicability of oil engines, there is scarcely any power plant of any appreciable size figures today where oil engine bids are not seriously considered and often preferred. This is true even in that part of the country where steam is required for heating in winter, as burning oil under the boilers has led to the conversion of many heating installations in the past few years; in fact, this efficient and economical method of firing boilers with oil has been the forerunner of the replacing of the steam units by oil engines in these very same plants.

The most important part of a quarry is the power plant, for that is the heart upon which the rest of tht plant depends for a continual flow of steady power. This has been obtained in the past largely by steam engines, while a number of more recently constructed plants are operating with electric drive, the electricity being supplied by oil engines. The power equipment of the quarry industry averages less than 200 H.P. This has been the reason that the quarry industry has not adopted oil engines to a greater extent, for when the time comes for a change to be made the first thought is electric drive, and negotiations are started with the local electric company with the idea of getting away from first cost of a private power plant along with the so-called objectionable high fixed charges. The proof of the pudding is the fact that electrical power may be generated by the private power plant at less expense and with more satisfactory results than either with steam or the temporarily popular plan of purchasing power from outside sources.

Let us consider the two most important factors in the selection of power for a quarry.

1. Comparison of the cost of generating power with the cost of purchasing current.

2. Type of drive, (a) line shaft, (b) generator for individual motor drive.

The statement is often made that the first cost of oil engines is so high that they are out of the question in comparison with a steam engine. Quite true as far as it goes, but it is no comparison at all betwen the first cost of an oil engine and the first cost of a complete equivalent capacity steam plant. An oil engine costs more than a steam engine, but then it is a complete power unit in itself. Let us not forget that the steam engine is only part of the power plant, for the steam engine is merely a mechanism for transmitting the power of the steam in the boiler to the line shaft or generator. It needs many expens-

ive accessories which the oil engine does not require. It is emphasized, that in oil engines the line of conversion of the heat energy of the fuel oil to horse power at line shaft or electrical energy at switchboard is short, direct and above all, highest in economy. The steps are few, the amount of equipment a minimum, the economy automatic and independent of operators. The steam plant presents an entirely different and admittedly a much more complicated picture. The line of energy transformation is much longer, containing many steps largely dependent upon the human element and the heat energy of the fuel is subdivided with many inherent losses to the power consuming auxiliary until only a small per cent of the total available heat energy of the fuel is delivered in the form of energy at line saft or electrical power at the switchboard. So careful investigation of the respective costs of the two plants shows less difference than popularly supposed, for in most instances the first cost of oil engines is even less than that for complete modern steam plant.

Now as to comparison in operating costs between the two, this is the outstanding factor in favor of the oil engine, in fact a number of manufacturers disregard the comparison of first costs and will completely install an oil engine plant on the basis of savings alone, that is, taking the difference in operating costs to pay for the engine. That alone speaks for itself as to operating costs. To be specific, we will take them up in the following order:

Fuel Consumption: An oil engine unit of 150 H.P. operating at full load for 10 hours will consume 120 gallons of fuel oil, which at 6c per gallon costs $7.20 for the day's operation as compared with 5 tons of coal at $3.50 per ton, which would cost $17.50 for a day's run as these figures are very conservative, one can readily see where the oil engine will cut the fuel cost more than half.

Lubricating Oil: The consumption is remarkably low, averaging as high as 3,000 H.P. hours on a gallon which would mean less than one gallon of lubricating oil for a day's operation, and in comparison with steam plants the cost of lubricating oil is less than the oil used for lubricating the auxiliary alone.

Maintenance: On account of the mechanical perfection of the modern oil engine, its maintenance cost is lower than that of a complete steam plant and remains practically at a fixed rate, in fact the maintenance cost is very little, if any, higher than on the steam engine alone. It has been shown over a period of ten years that the maintenance cost is 3%. It should also be borne in mind that about 75% of the cost of the modern oil engine is not subject to depreciation at all.

Labor: The oil engine is spoken of as a one man unit, for one man can completely attend to the operation and also look after other work around the plant. A licensed engineer is not required, while in steam plants, a licensed engineer and fireman are necessary. In comparison with purchased current for power, we must concede that it is very nice to be able to have nothing to do but press the button and the wheels start turning. It is very convenient indeed, but did you ever stop to think just how much it was costing you for that service in comparison with oil engines. Generally the rates of central station current does not exceed 3½c per K.W. while oil engines produce current at 1½c per K.W., including interest on investment, depreciation, insurance and taxes.

In getting back to fixed charges, unfortunately, the fact remains that it does not matter who owns the plant, the consumer of power must pay and does pay the fixed charges on that plant. In event that a central station supplies the power, the consumer's estimated proportion of the total fixed charges are paid in demand charges, and not only the fixed charges on cost of producing the power, but the rates must include the high salaries of executive officers and operating forces, consisting of engineers, linemen, meter maintenance and readers.

If 6% depreciation is laid away every year, at the end of fifteen years the entire plant may be replaced, which will at that time have returned in dollars and cents, from three to four times the cost of the equipment.

As to drivers, that all depends upon the location of the machinery in the plant. A number of the modern plants have been completely electrified and after running for a season,

have found the power cost excessive, so they have installed oil engines, direct-connected to a generator, producing their electric current at a saving of from 1c to 2½c per K.W. hour. The writer has recently visited a number of successfully operated belt-driven quarries where oil engines have replaced the old worn out steam engine.

A recent survey by one of the largest oil engine builders in the United States, covering the total H.P. they have built for the last twenty years, shows 98% are still in operation, 1½% not operating and less than ½% that have been replaced, which goes to show that the life of oil engines compare favorably with the steam engine.

The oil engine is found in thousands of small power plants. The success of this type is due more to the simplicity of the machine, than to the care and skill of the operator; in fact it is by no means unusual to find a plant where the engineer knows only how to start the engine and oil it occasionally and the engine is left to run itself. There are only a few main points concerning he engine's care and adjustment that are vital, with which one can become thoroughly familiar in a few days of operation. Of course, the oil engine does not necessarily work out best for every conceivable condition of service, but in the past, too many off hand assumptions have been made against oil engine power, without any real investigation. Many companies that should have installed oil engines, neglected their opportunities to save money by decisions based largely on prejudice or magnified hearsay from sources too often connected with steam equipment or other unfriendly interests.

The difficulty of getting coal, coupled with its high price, have added weight to the increasing demand for oil engines, as well as the ever widening adoption of oil as a fuel. As the public is accepting oil as a fuel, so will it accept the most efficient way of using it. As the price of all fuel becomes higher, the relative advantage of the oil engine becomes greater and greater for fuel forms a high percentage of the total cost of power.

Every day there is new evidence of the increasing trend of favor towards oil engines for use in quarries. Yet there are many power users who are still more or less unfamiliar with the remarkable stage of development and adoption reached today. This type of prime mover is so efficient and its ability to reduce present operating costs is so great that owners and operators of quarries, either large or small, will do well to investigate its possibilities.

We know that the use of the oil engine while extensive is yet only a fractional indication of what it will be in a few years, as it has so far been the choice of discriminating buyers because of the economy it shows in the long run and its future is limited only to the extent of educating the power users to its possibilities.

New Plants In California

A new rock crushing plant is being built at Baldwin Park, Calif., by the Union Rock Company which when completed will have a daily capacity of 5,000 tons. This company owns and operates five other rock and sand plants, three at Azusa, one near Baldwin Park and one at Brush Canyon, totalling 15,000 tons daily capacity. The new plant brings this total up to 20,000 tons per day.

New McMyler Offices

Announcement is made that in order to better serve its friends and customers, The McMyler-Interstate Company of Cleveland, O., has moved its Chicago Branch Office into new and larger quarters at 648 Railway Exchange Building.

The McMyler Company also announces the opening of a new branch office at 619 Genesee Building, Buffalo, N. Y., in charge of Mr. J. E. McFate.

Gypsum Engineer In California

Virgil G. Marani, chief engineer of the Gypsum Industries, is visiting industrial centers in the state of California, and while there will secure valuable information pertaining to production and uses for gypsum.

Keen Interest Shown In Materials

Building Industries Continue Active, Prices Remain Stable, Labor Steady

By Our Eastern Correspondent

PRODUCERS IN the sand, gravel and crushed stone industries are showing a keen interest in the trend of affairs as the spring season opens at New York and other parts, with the eastern district more than holding its own in the line of production and demand. With the progress in construction during the past three or four months, due to the open winter weather, there is not likely to be any pronounced spurt in activities during the next 60 to 90 days, as was the case a year ago. Rather, the coming months will see the consummation of projects and prospective projects calling for large quantities of material, but in a normal way.

The building industry at New York and vicinity continues its call for cement, sand and related materials in an encouraging way. There is considerable activity at present, and evidence of many weeks work ahead. Weekly construction contracts in the Greater New York section are now running from $20,000,000 to $24,000,000 gross, and these figures, alone, indicate the quantity of building material which is being absorbed.

Road construction in the New England and Middle Atlantic States during the coming year is expected to exceed $40,000,000, and with appropriations now scheduled for the season, sizable contracts are being placed for gravel, broken stone and cement; a number of quarries are practically sold up for several months to come. The road program of the New Jersey Highway Commission for 1924 calls for 1924 calls for an expenditure of $6,892,000, and in addition to bids to be asked for new work, the commising the coming year is expected to for an expenditure of $6,892,000, and in addition to bids to be asked for new work, the commission has approved the advertising for materials to be used in the maintenance department, to secure the advantage of desirable market figures.

Other states in this section are taking a like action, while Pennsylvania and Connecticut are arranging for wholesale purchases of cement, gravel, etc., to secure rock bottom quotations and assurance of available material as required. This plan has been followed successfully by other states, including Illinois and Wisconsin.

It is many months since the labor situation has been as well stabilized as at the present time, and with mutually satisfactory contracts in force, the building industry as a whole in the eastern section looks forward to rapid progress in the completion of projects as they mature. Producers, on the other hand, report a fair supply of available labor as needed as the weeks mature, with wage scales both for skilled and common labor quite well established. For the last noted, this varies at the present time from 45 to 70 cents an hour.

The prices of building materials, in general, are above those of a year ago, but the firmness in the markets at New York and other eastern centers indicates that no decline can be expected. If anything, the general tendency of the market levels is upwards, although there is as yet no change in quotations of various rock materials.

Good washed gravel from the Cow Bay and other producing districts holds at $2.00 a cubic yard in carload lots at the New York market, wholesale to dealers and contractors, both 1½ and ¾-in. sizes. Grit material in this city holds at $1.75 a cubic yard. Building supply dealers show a strong tendency to stock up for forthcoming business, and are charging $3.50 a cubic yard for stock, delivered on the job. The same rate applies to grit.

Clean, sharp white sand is quoted at $1.25 a cubic yard, as compared with a figure of $1.00 a year ago, wholesale in cargo lots. The material yards are asking $2.50 and sometimes a fraction more, delivered to site. The past fortnight has shown considerable additional strength in volume of call.

Wholesale demand for broken stone shows marked increase. The recently established levels of $1.75 a cubic yard for 1½-in. stock, and $1.85 for ¾-in. material, hold without change, and promise to prevail through the coming months. Material dealers are willing to stock up at these figures, and in turn are asking $3.25, delivered, both sizes, in Manhattan and Bronx Boroughs.

Portland cement remains uniform under increasing sales, being priced at $1.95 per barrel at the mills in the Lehigh Valley district, $2.15 alongside dock at New York, and $2.50 to $2.55 delivered to dealers in the last noted city, in wholesale quantities. Material yards across the river, at Jersey City and Hoboken, N. J., are paying $2.35 alongside dock. Retail, the quotation shows no change from $3.00 a barrel, delivered on the job, less bag rebate of 10 cents each.

Finishing lime at New York is selling wholesale at the warehouse at $3.75 a barrel, and being retailed at $4.50; common lime is priced wholesale at $3.00 and $3.15 a barrel, and retailing at $3.75. Hydrate finishing lime is $18.15-$18.20 per ton, wholesale, and $24.00 a ton, retail, delivered.

The Boston Trap Rock Co., Boston, Mass., has been formed with a nominal capital to operate a local crushed stone business. E. Pendleton is president, and J. Marie Forbes, Somerville, Mass., is treasurer and representative.

The Broome County Sand & Gravel Co., has been organized at Binghamton, N. Y., with a capital of $25,000, to operate extensive local sand and gravel properties. The concern is headed by G. D. and F. B. Davis, and J. J. Cox, all of Binghamton.

William W. Bachman, White Plains, N. Y., has acquired at public auction the properties of the Kensico Quarry Co., for a consideration not yet announced.

The Olean Sand & Gravel Corp., Olean, N. Y., has been organized with a capital of $150,000, and 1,500 shares of common stock, no par value, to operate a large plant and make extensive developments in this section. Plans are in prospect for extensive developments and production. It is headed by T. H. and P. H. Quinn, and M. L. Barton.

The Englewood Stone Co., Englewood, N. J., has been chartered with a capital of $125,000, to operate a local quarry. The company is headed by Ray C. Tillinghast, Millard C. and Herbert W. Furman, 25 East Palisade Avenue, Englewood.

The rock crushing and ore plant of the Replogle Steel Co., Ogdensburg, N. J., employing about 50 men, was partially destroyed by fire on March 10, with loss estimated at about $40,000, including several crushing machines and auxiliary equipment. It will be rebuilt.

The Winslow Gravel Co., Camden, N. J., recently formed with a capital of 400 shares of stock, no par value, will operate a local sand and gravel business.

The Staso Milling Co., York, Pa., representing $250,000 investment, has practically completed its new slate grinding mill in the Slate Ridge section, near York, and plans to commence large operations soon. The plant has a rated capacity of 500 tons of slate granite per day.

The Whiterock Quarries, Pleasant Gap, near Bellefonte, Pa., operating limestone properties, are planning expansion and will soon commence the installation of additional equipment, including a kiln, air compressor, conveyor system and other apparatus. About 65 new quarry cars will also be placed in service during the year. The working force has recently been increased from 100 to 200, and it is expected to maintain at the latter quota for some time to come. Ray Noll is general manager at the plant.

Ohio Sand and Gravel Association Grows

A meeting of the Ohio Sand and Gravel Producers' Association was held in Columbus, O., at the Deschler Hotel on Thursday, March 20. There was an exceptionally good attendance and several interesting talks were made, among which was an address by L. A. Boulay, Director of Highways of Ohio.

The association has been fortunate in securing quite a number of new members, says executive-secretary Guy C. Baker, and the prospects are that this will be one of the best years in its history.

C. M. Ault of the Barnes Sand & Gravel Co., Piketon, Ohio, is president of the association; Earl Zimmerman of the Ohio Gravel Ballast Co., Cincinnati, is vice-president; F. C. Fuller of the Portsmouth Sand & Gravel Co., Portsmouth, is secretary-treasurer; and Guy C. Baker, of the Greenville Gravel Co., Greenville, O., is executive secretary.

Spring Opens Slowly

Producers Have Plenty of Work Ahead and Await Only Good Weather.

By Our Memphis Correspondent

THE WINTER season has to some extent been protracted into spring in the Mississippi Valley, with much cold and considerable rain. Work in rural sections has been interrupted, owing to road building and gravel operations. City work is going along with slight interruption on rainy days, in fact a vast amount of gravel, cement and concrete work is in progress covering the range of reinforced concrete buildings, road and paving work, subway work, bridge work and other engineering undertakings.

During the spring months numerous Tennessee counties have let hard surface road contracts, and these will start shortly. In Memphis the Bellvue subway job, the large and final subway of the city, is under way and will be completed this summer and opened with a formal celebration.

Pit operation at gravel and sand places in the tri-states goes forward, on a good scale. The car situation is good and labor situation satisfactory. Demand for materials from the building trade has been large and inquiries on road material and railroad work are increasing.

The Wolf River Sand Co. of Memphis of which E. A. Cordes is president, had a large year in 1923 and this season have supplied sand for much of the biulding work in Memphis. Their gravel department is active. They have pits about one and one-half miles north of Wolf River. With dredge boat the sand is pumped out of a lake, conveyed 400 or 500 feet, washed and cleaned, then by dragline bucket system hoisted to top of a screening and washing plant for further process. Wagons or cars for local or shipping trade are then used. They ship north as far as Chicago, southeast to Birmingham, west into Arkansas and to other adjacent states. Jas. H. Griffith is vice president; W. W. Fisher, second vice president; W. P. Brown, third vice president; Paul Damman, secretary-treasurer; W. A. Bridewell, assistant secretary treasurer. The Memphis plant has a capacity of ten cars of washed gravel per day. Wolf River sand and Crow Creek (Ark.) gravel make an ideal combination for concrete.

The Allen Gravel Co., 414-415 Exchange Bldg. Memphis, report Tishomingo gravel operations about normal for this season, though weather conditions have to some extent retarded work. Local territory prospects are good on road work.

It seems that the Harahan Viaduct project will take form in a few months though there has been considerable interruption to its building, preliminary legislation being necessary in Arkansas.

The Raleigh Sand and Gravel Co. of Memphis, Tenn., has leased 100 acres of land on Cedar Grove Road in Raleigh from the Goodwyn estate and will use the property for the gravel contained on it. The gravel is of excellent quality, washed and screened. J. L. Powell is owner and manager of the plant.

Very large projects in construction lines just getting under way at Memphis are the 12 story Hotel Peabody including 45 store rooms on Union between Second and Third.

The Ford Motor Co. plant is being built on Riverside Blvd., Memphis, general contract held by Blair Construction Co., Memphis: three buildings, one eight hundred feet long, a power house and oil house. Albert Kahn, Detroit, is architect and engineer. The Lowenstein department stire, nine stories, superstructure up, completion Aug. 1. Gauger-Korsmo Construction Co. General contractors. Hanker & Cairns, Memphis. Emil Weil, New Orleans, architect.

The new sub-post office S. Second and Calhoun, contract awarded Algernon Blair, Montgomery, Ala., $100,000. Work not yet started. The Columbian Mutual Life Assurance Bldg., $1,500,000, Keeley Construction Co., St. Louis, general contractors, superstructure up. Cotton Exchange Bldg., 12 stories, Kaucher-Hodges Co., Memphis, contractors, superstructure up.

The county jail contract, about $600,000 to be let April 1. The First Methodist Church contract additions let to Estes-Williams-Ragsdale Co., a few days ago, a four-story structure, cost about $125,000. Several large schools and hospitals also contracted recently. In all of these more or less cement, tile and clay products work

figures. The Cossitt Library addition is being built of artificial red sand stone. Loeb Stone Co. are manufacturing cement stone as are several other industrials in Memphis.

The Marquette Cement Manufacturing Co., plants at LaSalle, Ill., and Cape Girardeau, Mo., have established Southern office in the new Security building Madison and Front, Memphis. This new 12-story structure is to be completed in April. Marquette cement was used in the building. The exterior is of Bedford stone.

W. S. Knight, of the Camden Gravel Co., Madison Ave. Bldg., Memphis, has recently been made Sheriff of Shelby County, a very important position made vacant through the death of Sheriff Oliver Perry. Mr. Ridley is actively directing this gravel firm now.

The Memphis Lime and Cement Co., Inc., N. Main and L. and N. R. R. has been organized by Henry Wurzburg and others. They will handle lime, cement, sand, gravel, plaster, roofing, etc.

Long Clay Pumping Line

A pipe line nearly a mile long, connecting the clay beds with the plant, has been completed for the Manitowoc Portland Cement Company, whose $1,000,000 factory will be in operation at Manitowoc, Wisconsin, in a few weeks. The cement company several months ago purchased a tract of land from the Wisconsin Central road containing large clay deposits, which will supply needs of the concern for several years.

The pipe through which the clay, in 65 per cent solution, will be carried to the plant is eight inches in diameter. This solution will be forced through the line by a hydraulic pump.

Practically all outside work on the plant is completed. The factory is located upriver on the site formerly used by the Reiss Coal Company for docks. In 1925 the company plans to manufacture 1,000,000 barrels of its product.

The Hutchinson Quarry Company of Nicholl Point, Calif., has purchased from the Nicholl Company about 10 acres of quarry property for $40,000.

Record for Aggregate Loadings

Indications Are for Biggest Year Yet. Opportunity for Americans.

By Our Washington Correspondent

THE outstanding promotional activity of the National Sand and Gravel Association for the present year will be the greater use of washed gravel for railroad ballast. Officers of the association feel that the railroads would be greatly benefited by using the washed product, and that an association campaign with this end in view would obtain results that would prove beneficial to the members.

President John Prince, of the association, who has recently returned from a business trip to the Pacific coast, has appointed the following well known producers as members of a committee to actively take this matter up with the railroads: Earl Zimmerman of the Ohio Gravel Ballast Company, of Cincinnati, chairman; George C. Ross, of Parkersburg, West Virginia; J. B. Blanton, of Frankfort, Kentucky; and H. W. Christie, of St. Louis, Missouri.

There will be a meeting in Atlanta during April, the date as yet being unfixed, of producers in the Southeastern states to consider proposed changes in the freight rate structure. The Interstate Commerce Commission has recently ordered some changes in freight rates on foodstuffs and cotton, but these changes were not extended to sand and gravel products. In connection with the question of freight rates, it might be well to state that statistics in possession of the Washington headquarters of the association show that loadings of sand, gravel and stone continue to break all records. This would seem to foreshadow a record-breaking business in the industry for 1924.

The House has passed and sent to the Senate a bill introduced by Representative Sinnot, of Oregon, aggregating appropriations of $7,500,000 for improving roads and trails in National parks in the West. Two and a half million is authorized to be appropriated for the next two fiscal years and $2,500,000 for each of the succeeding two fiscal years. Appar-

ently there is no opposition to the bill and there is every reason to believe it will go through the Senate.

This bill is in addition to the regular good roads bill upon which the House Committee on Postoffices and Post Roads conducted hearings the latter part of March. This bill carries an appropriation of $100,000,000 for the next three years for Federal-aid roads. The bill probably will go through without difficulty.

No country can reach its greatest development lacking the proper facilities for transportation. And the republics of South America, whose vast resources lie virtually untouched because of inadequate and in many cases primitive means of transportation, furnish good examples of the effect of this handicap. One of the encouraging signs of their recovery from the world-wide state of economic depression resulting from the war is the activity now being manifested on the part of many of the South American republics in road building and railway construction.

One of the most important railroad construction projects in South America is now underway in Bolivia, where American engineers are building a railroad which will connect the Bolivian railroads with those of Argentina. When this is completed, Bolivia will be connected by rail with Buenos Aires, and rail communication will then be possible between the Pacific coast (with which Bolivia is now connected by three rail routes) and the great port of outlet for the Argentine. The distance between New York and Buenos Aires will thus be shortened materially, and Bolivia, placed in the heart of a transportation route of immense importance, will benefit.

In addition to Argentina's program for road construction, which was touched only on the surface, it is interesting to note what some of the other countries are doing, all of which offers to American road builders and material men an opportunity to extend their business to foreign countries. It is believed here that the road building plans of Central and South America will mean a tremendous demand for American road building machinery.

Chile is completing her part of a transcontinental roadway, 2,738 miles in length, which will connect Valparaiso and Santiago with Buenos Aires. In addition, large sums have been appropriated for highway improvement, and much work is now underway in various parts of the republic. To tap her rich resources, which have been only scratched, or which have lain dormant, Brazil is pushing road work in many parts of the country. About 600 miles of motor roads were completed in 1921, and the road-building program this year exceeds that of last.

In Peru a much-needed highway is under construction between the capital city, Lima, and the port of Peru-Callao. The road will be constructed with modern material, hard-surfaced enough to stand the heavy motor traffic which will pass between the capital and its outlet to the Pacific. Venezuela is among the most progressive of the southern republics in building roads to open her vast riches for development. She is seeking to link her interior, where the products originate, with the Atlantic ports, whence they will be shipped throughout the world. Argentina possesses some 23,000 miles of railroad, owned for the most part by companies in Great Britain and operated to a large extent by the English. Because of her rich agricultural lands and the general absence of physical barriers, there are great possibilities for railroad building in Argentina.

Produce Gravel in Columbus

The latest addition to the sand and gravel producing industry of Columbus is the plant of the Greenlawn Gravel Co., located on the west bank of the Scioto River just south of Greenlawn Ave. bridge.

Herbert R. Gill, who is president of the Island Sand and Gravel Co., off the foot of W. Moler St., is also president of the Greenlawn Gravel Co. He is a pioneer in, and an authority on, sand and gravel production.

The Kaiser Paving Company of Redding, Calif., in order to supply material for paving 10 miles of road north of town, has purchased a large gravel deposit in east Redding for $35,000, and has erected a plant on the east side of the river for transporting the gravel by tramline across the river, for crushing where necessary and screening to size. Extra large bunkers were built for convenient loading into trucks.

Cement Orders Piling Steadily

All Companies Active and Many Working Overtime with Labor Steady

By Our Special Correspondent

WITH THE advent of the heavy cement consumption season, production becomes the order of the day in the Lehigh Valley district of Pennsylvania, and every mill is on the producing list, with overtime schedules operating in a number of the plants. The orders for material continue to pile in, and there is hardly a company or plant in this section that cannot see maximum output ahead for some months to come.

The call for cement is now noticeably in larger quantities, with road construction assuming a prominent position in the consumption. It is confidently expected that 1924 will round out one of the biggest road-building years in the eastern district, and the Lehigh Valley mills will sustain the burden of the load for material. Building construction, likewise, is commencing to feel the effects of the approaching spring and sizeable orders are now being recorded from building material interests and contactors. This branch of work gives equal promise of being a large consumer of cement during the present year, probably topping the notable record made during the final half of the year past.

Railroad companies are now being called upon to furnish an increased number of cars for daily shipments and up to the present writing have been co-operating in good fashion with the mills. The February shipments from the mills in this district have paralleled the January record, and the month went out with a noticeable increase over the corresponding period of a year ago.

Beginning last month, some of the mills commenced a basis of larger production and as a consequence, several plants have been able to put a considerable tonnage in storage for the immediate weeks of heavy call just ahead. Some of this material, however, is not for the open market, having been sold and stored locally for the convenience of customers some weeks ago, the purchaser, on the other hand, being assured of shipments when desired. The larger building material dealers have been among those to purchase ahead.

There has been an added call for labor at the plants in recent weeks and in the majority of cases, these have been filled satisfactorily. The supply of men, however, has now been materially depleted and if the trend continues upwards, as now expected, it is likely that a shortage will be experienced. The wage situation remains quite well stabilized, and no difficulty is now anticipated on this account. The men are being paid wages quite uniform with the iron and steel, and other prominent industries in this district, and for this reason, if for no other, are apparently satisfied.

The Atlas Portland Cement Co., is active at its large mills at Northampton, and heavy shipments are leaving the plant for southern and eastern destination. The company has adopted a night working schedule in the packing department, which will continue for an indefinite period. Other departments of the works are running full, with regular working forces.

The Lawrence Portland Cement Co., Northampton, is another active producer in this same district, not only at its mills, but quarrying operations have been increased materially during recent weeks.

The Giant Portland Cement Co., is running at its Coplay mill under a regular production schedule, with full working force, and expects to continue on this basis for an indefinite period. The company is said to have scheduled some heavy orders during recent weeks. Arrangements are being made for the early resumption of operations at the Central mill at Egypt mill, which has been undergoing a complete overhauling for several weeks past.

The Lehigh Portland Cement Co., Allentown, is maintaining an active production schedule at its different mills and easily holds its position as one of the large producers of the Lehigh Valley region. Capacity production is planned for months to come, with practically the entire output well sold in advance. The company is giving employment to a large number of workers in the different departments of the mill, as well as at its quarries.

The Alpha Portland Cement Co., is busy at its plant at Martins Creek, Pa., and large shipments are going forward for road construction and building material dealer accounts. All departments are on the active list, wtih regular working forces. There was an explosion of coal dust in a coal elevator shaft at the local No. 3 mill early in March, but fortunately, little damage was done to the plant.

The Edison Portland Cement Co., New Village, N. J., is operating under heavy production at local mill and quarry, with no abatement in incoming orders for material. The quarry properties have been particularly active in recent weeks, and a number of blasts have been set off. The mill suffered about $5,000 damages a few weeks ago by a fire, which was quickly brought under control, however.

The Peerless Portland Cement Co., Detroit, Mich., with plant at Union City, Mich., has placed a contract with the Traylor Engineering & Mfg. Co., Allentown, Pa., for a portion of the machinery requirements for its new mill in the River Rouge, Detroit, district, now in course of construction. The new River Rouge mill will have a rated capacity of about 1,600,000 barrels per annum, and is estimated to cost in excess of $1,000,000, including machinery. Other contracts for equipment will be placed soon.

The San Antonio Portland Cement Co., San Antonio, Tex., plans to erect a new building soon at its plant at Centerville, near San Antonio, to be used primarily as a raw material mill. The structure will cost approximately $25,000, exclusive of equipment. Plans are also in progress for the construction of a new series of concrete storage tanks, consisting of a battery of ten, each to be 20 ft. in diameter and 50 ft. high. The work will cost about $100,000. Other improvements are in contemplation.

The Riverside Cement & Asbestos Co., Detwiler Building, Los Angeles, Cal., plans the erection of a new cement fill in the Eden Hot Springs section, to consist of a main operating unit and a number of auxiliary structures, including power house and machine shop, and will be equipped for an initial output of about 1,000 barrels per day. It is estimated to cost in excess of $650,000, including equipment. J. H. Richardson is president; G. H. Denton, vice-president and C. F. Hansch, secretary. Amos Jones is superintendent for the company.

The Clinchfield Portland Cement Co., Kingsport, Tenn., has commenced work on its new plant at Coreen, Ga., where a large tract of property recently was acquired. The mill will consist of several buildings, with main operating unit and power house, and will be equipped to operate under the wet process of manufacture. It will have a rated capacity of 750,000 barrels per annum, and is estimated to cost close to $900,000, with machinery. Additional units will be built later.

Another Lime Plant At Rockland, Maine

A new lime corporation at Rockland, Maine, was recently capitalized at $1,000,000. The name of the new firm is the New England Portland Cement and Lime Company, and the capital stock is divided equally into common and preferred issues. The common is made up of 20,000 shares of the par value of $25 each; and the preferred is in 5,000 shares of the par value of $100 each.

Adelbert L. Miles is president; Ada Barbour is treasurer; S. T. Kimball is clerk. The purposes of the corporation include the mining, quarrying and refining of limestone and other rock or minerals and clay, and the manufacture and sale of lime and cement.

The name of this corporation will revive in the minds of the people of this vicinity memories of the old New England Portland Cement Company, which controlled an enormous acreage of shale land and other property, reaching from Appleton, through Thomaston and Rockland, to the ocean. The old company made a thorough prospect of its properties, including thousands of analyses of borings. It was determined at that time that under certain conditions Portland cement would be made profitably in this locality.

A very substantial reduction in rates on sand, gravel and crushed stone from the Ohio River and all Baltimore & Ohio Railroad points to Elkins, W. Va., has been secured through the efforts of the Elkins Chamber of Commerce.

Cincinnati Sees Good Season

Producers Predict Satisfactory Season, Prices Remain Quite Steady.

By Our Cincinnati Correspondent

THE OUTLOOK for spring and summer and in the southern Ohio basic material market looks favorable, with a demand which foretells business volume greater than the corresponding period of last year. Already contracts covering supplies for spring building programs and private and governmental road work are being let, while general activity in the producing operations is showing alacrity.

The demand for materials is reported on all sides as good, and the supply of materials on hand is more than sufficient to meet current consumption. Supply houses announce that they are satisfied with the early spring call for materials, and are in accord in predicting an active period ahead, while operators are enthusiastic in their work of opening up pits, unused the past winter.

Prices on all materials are practically stationary. Washed gravel sells at $1.50 a ton f.o.b. cars, while sand continues at the old price level of the past year of $1.20 a ton, f.o.b. cars. Cement is slightly lower than the price of one year ago selling at the current level of $2.82 a barrel. Mason lime is quoted at $14.30 a ton, and finished lime stands at the same price level of $16.80 a ton. No change in any of these prices is looked for.

The large supply house of The Cincinnati Builders Supply Company, Cincinnati, are enjoying an unusually fine outlet for business, and are looking forward to increasing their business again in the very near future when the spring road work gets under way in earnest. Manager Wilde of the company states that in addition to the demand emanating from spring road construction by the state road programs, there will be for the first time in many seasons, street work in Cincinnati, as bond issues amounting to $800,000 have been passed for this purpose.

There will be a heavier demand for rock ballast this year from the railroads than in past years states Earl Zimmerman, sales manager of the Ohio Gravel Ballast Company, Cincinnati. Mr. Zimmerman will open the first of April four of their operations, and preparations will be made to fulfill railroad contracts. During the past month two new 40-ton Davenport locomotives have been installed, one in the Cleves, Ohio plant, and the other at the Miamiville, Ohio diggings.

Conditions just to the east of Cincinnati in the little Miami river section, where some of the Ohio's finest quality sand and gravel is produced, is satisfactory, and continued improvement and increase both in demand and production is looked for, according to J. Cornell, manager of the largest concern in that section, the Red Bank Gravel Company. Although this company has sufficient supplies, increased production will be effected as soon as the rainy period is over.

The Moores-Coney Company, Cincinnati, supply house, has purchased as an investment, the old Contractors Stone and Gravel Company, east of Cincinnati, comprising some 55 acres. During the war the company was oprated for the construction of the Anchor Nitrate Company, which was partly completed when the Armistice was signed, then never finished by the government.

Stucco Houses Cause Increased Cement Use

Gowing popularity of the stucco house—growing fastest in California—probably is responsible for the fact that state consumed more Portland cement last year than any other state in the Union—2.23 barrels per capita.

Arizona took second place with 1.59 barrels—building dams for irrigation purposes, doubtless.

Michigan was third and high middle western state, using 1.58 barrels of cement per capita. Delaware led the east, in fourth place nationally, with 1.54 barrels.

Florida heads the list in the south, and stucco bungalows must have contributed toward its score, consuming .89 barrels per capita.

The general average consumption throughout the United States was 1.06 barrels.

Winter Active, Spring Rush Near

No Change in Market Levels Expected and Orders Are Being Placed Far in Advance

By Our Pittsburgh Correspondent

EACH DAY is bringing more pronounced activity in the sand and gravel trade at Pittsburgh, Pa., and within a few weeks the spring producing season will be on in full force. There has been no noticeable lag in output during recent months, however, for the early months of 1924 have been decidedly productive from all sides. The river supply to the local port has been maintained and sales have run well above the average for cold weather.

During the past thirty days practically every sand and gravel producer has had one or more steamers laid up for overhauling, while scows in large numbers have also been gone over. The Dravo Contracting Co. and the Marine Mfg. & Supply Co., two of the largest interests in this line, have been handling river craft for the sand and gravel industry and also for the various coal companies, iron and steel, and other industrial concerns with vessels plying on the rivers. The work, in bulk, represents an aggregate of many thousands of dollars. The United States inspectors, also, have been equally busy in granting permits.

Market levels continue quite uniform, and no immediate change is expected. Buying is advancing in considerable volume and orders are being scheduled ahead to make certain of deliveries.

Clean river sand continues around $1.50 a ton in the wholesale transactions, with local supply dealers asking $2.40 for the material, delivered on the job. There is good prevailing business for the commodity and accumulations of the producers are being drawn upon for immediate sales.

Fine washed gravel duplicates sand with regard to market conditions. It is selling at a price of $1.60 f.o.b. barge, and at $2.00 a cubic yard, delivered on the dock waterfront. The building material yards are quoting from $2.30 to $2.40, delivered on the site in the different established zones. Current business is satisfactory.

Broken stone is selling for $2.85 a cubic yard in the wholesale market, both sizes, 1½ and ¾-in., as compared with a figure of $2.80 at this time a year ago. On a tonnage basis, dealers are asking $2.50, delivered on the job. Portland cement holds to the $2.19 wholesale level, established a few months ago, and which in reality is about 5 cents a barrel below the prevailing quotation at this time in 1924. The supply yards are asking $3.25 a barrel, less the regular bag rebate of 10 cents each.

E. T. Slider of the Slider Sand & Gravel Co., Louisville, Ky., was a recent visitor to Pittsburgh, during the laying of the keel for a sand digger for the company at the works of the Midland Barge Co.

The Rodgers Sand Co., is maintaining its usual activity on the river, using the steamer "Margaret" for bringing material to port. Work has been completed on the vessel "Rebecca," and it and the dredge "Flora" are again ready for service.

Fire did several thousand dollars worth of damage at the dock of the Valley Sand & Supply Co., on the Monongahela River, Pittsburgh on March 13.

Harry Davison of J. K. Davison & Brothers, Pittsburgh, among the leading sand and gravel producers in this section, has left for an extensive trip to South America, and is expected to be absent for a considerable time.

Object to Cement Rates

Kansas and Missouri manufacturers of cement yesterday began telling the interstate commerce commission and the Kansas public utilities commission of their difficulties with regard to freight rates. Leo. J. Flynn, examiner for the interstate commerce commission, is sitting with the Kansas commission at the hearing.

Kansas and Missouri cement manufacturers are classified according to groups, for rate making purposes. This hearing, which is expected to continue the remainder of the week, is the result of the various groups objecting to rates the other groups enjoy.

Nearly 6,000,000 Tons of Gravel

Indiana's 1923 Output Valued at $3,000,000 and is Second in U. S.

By Our Indianapolis Correspondent

BETWEEN 5,000,000 and 6,000,000 tons of gravel, the aggregate value of which was more than $3,000,000 were taken from Indiana pits last year, says a report by Dr. W. N. Logan, state geologist. During 1920 Indiana produced $7,579,303 worth of building stone; $1,397,554 of crushed stone; $18,649,115 of cement; $46,994,153 of coke; $61,000,000 of pig iron; $15,494,795 of clay products, and $1,348,819 of lime.

Although Indiana, said Logan, is the 37th state in size she ranks second in production of cement, and two counties produce 70 per cent of all the limestone used in the United States for building purposes, according to the United States geological survey.

Manufacturers of cement building blocks in Indianapolis, numbering more than 50, have raised the price of their product 2 cents a block.

Says the city building inspector: "The only reason I can see for the increase is that the manufacturers will be required to make better blocks than in the past, now that we have a block testing machine with which we will make frequent tests of the blocks made by each company."

The block testing machine recently was placed in the City Hall. Hamilton, the inspector, said tests made in the past had shown many defective blocks manufactured. Some would break to pieces when dropped on the ground, he said.

"We are testing the blocks now without charging fees to the makers," he said. "Therefore, the only reason for an increase in the price is that it will cost more to manufacture blocks that will meet our strength tests."

Blocks that had been sold for 15 cents and 18 cents will sell for 17 cents and 20 cents under the new price scale, Hamilton said.

The need of a reduction in freight rates, and the course to follow in the reduction, were discussed at a special meeting of the Indiana Sand and Gravel Association, held at Indianapolis recently. E. Guy Sutton of Williamsport read a paper on relations with railroads, and it was voted at the meeting to endorse the plan of the Ohio valley shippers' regional advisory board of the American Railway Association, which seeks to promote better relations between the railroad and the shipper in the distribution of cars. Howard Hoel, of Greenville, O., urged the association to adopt some definite plan that would lead toward lower freight rates.

Through its Terre Haute attorney the Kickapoo Sand and Gravel Company, operating a large pit at Peru, Ind., has filed a petition with the public service commission asking a hearing on its plea for a reduction of the freight rate charged on its products by the Chesapeake and Ohio, the Wabash and the New York, Chicago and St. Louis railways to points in the state.

The petition sets forth that for two years the company has been shipping sand and gravel to intra-state points on the C. & O. from Richmond to Chicago; on the Wabash from Ft. Wayne to Lafayette, and on the N. Y. C. & St. L. from Rochester to Noblesville, and paying a rate that runs from 70 cents a ton from Peru to Fulton, a distance of 20 miles, to three dollars a ton from Peru to Muncie, 97 miles.

This scale of rates, it is declared, is discriminating and prejudicial against the company inasmuch as there are from 25 to 30 competing pits in localities reached by the three railroads that are favored with a lower average schedule of hauling costs.

C. W. Stevens of the C. W. Stevens Gravel Company, Indianapolis, has announced that the company is contemplating the construction of two circular steel bins for the storing and loading of sand and gravel. With each bin having a capacity of about 150 square yards of sand or gravel, the daily output of the company will be increased to 700 or 800 square yards.

The bins which the company is considering are of a new design and if constructed will be the only ones of the type in Indianapolis. The containers are of the overhead design, feeding the material to trucks by the gravity system. They are cone-shaped, about 25 feet high, with a

diameter of 15 feet. One hundred and thirty-five tons of material may be stored with the top leveled, and 150 tons with the sand and gravel heaped. The bins are made from one-quarter-inch sheet steel segments rolled to the required arc and bolted together. Owing to the conical bottom there are no angles or corners to collect and hold back the material.

Dixie Mogul Crushers and Pulverizers

Two new bulletins of interest to quarry men generally have just been issued by the Dixie Machinery Manufacturing Co. of St. Louis. Bulletin No. 46 is entitled "Dixie Mogul Crushers," and Bulletin No. 45 "Dixie Hinged Hammer Crushers and Pulverizers."

Bulletin No. 46 describes the Dixie Mogul Crushers, which are designed for use in rock, coal, iron ore and other materials.

"The object in using these crushers in the quarry end of cement plants," says the Bulletin, "and in other industries where these materials are reduced, is to reduce to one unit what is now in many plants three or four units of other crushers with elevator and screens."

Dixie Moguls are intended to take the place of the intermediate crushers by taking the stone directly from the largest crusher in 8 inch to 14 inch cubes, reducing at one operation to 1½ inch, 1 inch, or ¾ inch size as desired and eliminating also the usual screening prior to storage in bins.

Bulletin No. 45 discusses Dixie Hinged Hammer Crushers and Pulverizers, series 3600, which is designed for the same material crushing as is the Dixie Mogul, with the following additional materials: Barytes, Borax, Carbon, Cement, Cement Rock, Chalk, Clay, Copper Ore, Granite Blocks, Limestone, Mica, Ore of all kinds, Phosphate Rock, Quartz, Salts, White Sand, Sandstone, Slag Slate, Soapstone.

The Dixie, they say, is equipped to handle rock in quarry work with less fines, doing the class of work of primary and secondary crusher. They are designed to do the range of work of several intermediate types of crushers, and it is claimed will take larger feed, and reduce either coarse or fine as the customer may require.

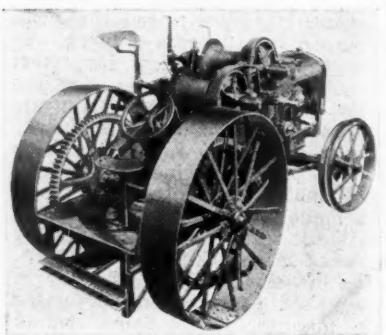
Dixie crushers are made in all sizes. Series 2000 Hinged Hammer Crushers and Pulverizers, with 20 inch diameter are made in 4 sizes of widths: 8 inch, 12 inch, 16 inch and 24 inch, handling from 1 to 10 tons per day.

Series 3600 Hinged Hammer Crushers and Pulverizers, with 36 inch diameter are made in six sizes of width: 14 inch, 20 inch, 30 inch, 40 inch, 50 inch and 60 inch. These are equipped for many classes of grinding, including the reduction of limestone, 2 inch and under, to 95 per cent through 20 mesh for tube mill feed without screens or separators.

Both of these machines are covered by positive guarantees against defects in material and workmanship, and any original part found defective will be replaced without charge.

Triumph Portable Hoist

The American Manufacturing and Engineering Company of Kalamazoo, Mich., are marketing a portable gasoline 35 H.P. four cylinder hoist that travels under its own power.



Triumph Portable Hoist.

It can be moved from one pit to another and will pull a trailer or screening plant along too. In emergencies the hoist can be removed from the power plant and used for hauling trailers.

The hoist will handle a ½ yd. cableway excavating bucket or a ¾ yd. drag scraper. When used with the Triumph Excavating Buckets an operator has an ideal excavating layout. The buckets, like the hoist, are strongly constructed and operate economically.

Caterpillar Mounting For Railroad-Type Shovels

Caterpillar mounting for railroad-type shovels is one of the most effective improvements that has been made in shovels of this type within the past twenty-five years. The Bucyrus Company is the first manufacturer to apply this mounting successfully to railroad-type shovels. The operating advantages made possible are numerous. It is possible to eliminate from two to four pitmen per shovel, and sometimes more, depending on the conditions; from 15 to 25% saving in operating time can be effected. There are no rails to lay, no jacks to release and set; the shovel is always ready to dig. The ease with which short quick moves may be made enable the shovel at all times to keep at the most effective digging distance from the face of the cut against which it is operating.

The mounting consists, in general, of two forward caterpillar units swivelling on jack-arms and a rear caterpillar truck carrying the tail end of the shovel. The front caterpillar units are mounted at the outer ends of the jack-arm castings, which are similar to the jack-arm used with the shovel mounted on railroad trucks. Each caterpillar unit consisting of tumbler, roller, frame and links, swivels on a horizontal pintle of a jack-arm casting, permitting freedom of the caterpillar unit to adjust itself in a vertical plane to the unevenness of the ground. They are propelled through gears and wobbler shafts from the main hoisting engine. No chains are used in this drive. The real caterpillar consists of two caterpillar chains mounted on one big solid truck casting. This truck swivels as one unit in all direction but is held against slewing by the steering mechanism. Steering is accomplished by driving the real caterpillar unit with power from the main engine. A bevel gear reversing drive on the first intermediate propelling shaft is engaged and reversed by a double-jaw clutch, permitting the rear unit to be steered. Power is transmitted through a cone friction clutch so proportioned as to transmit sufficient power for steering purposes and to limit the amount of power delivered in case an obstruction is encountered while slewing. This cone clutch transmits power to a longitudinal shaft at the end of which is a bevel gear driving a transverse worm shaft.

The Bucyrus Company in their bulletin M-10 presents a very clear discussion of this type of equipment.

Non-Freezing Explosive A Boon for Winter Work

It is a well known fact that explosives of the dynamite class freeze at comparatively mild temperatures. Therefore, the use of such explosives in winter has always been a problem—a problem entailing inconvenience, extra equipment in the way of thawing facilities and the loss of considerable time and labor.

For years explosive manufacturers labored and experimented to develop an explosive that would not freeze. But, while a number of so-called non-freezing explosives were produced, none proved equal to dynamite in its various other properties until the development of Ammite—a non-freezing explosive that possesses all the advantages of dynamite yet will not freeze no matter how low the temperature may go.

The manufacturers inform us that during the last two years millions of pounds of this comparatively new Atlas product have been used for various kinds of blasting work. In strength, velocity, stability and water resisting qualities, it is practically the equal of dynamite. While, for many kinds of work such as quarrying, engineering, road building and contracting, it has advantages over dynamite, in that it does more work pound for pound when the proper grade of Ammite is used for any particular class of blasting work.

More than that, many large users of Ammite have found it an excellent explosive as an all-year round stand-by—one that may be used in summer as well as in winter because it keeps indefinitely and will not deteriorate when stored under proper storage conditions.

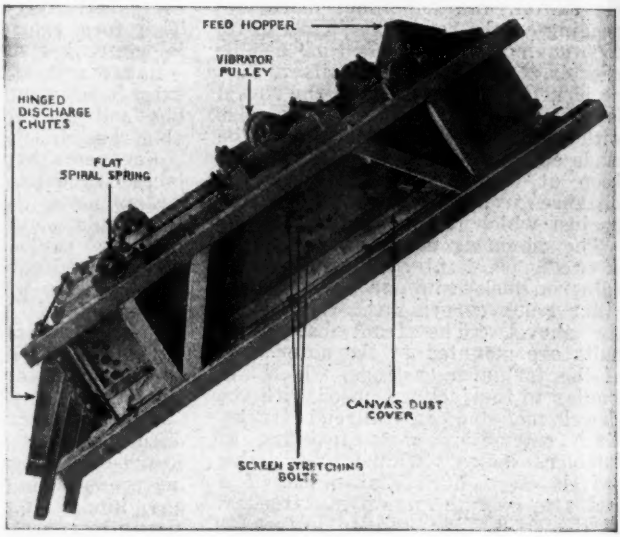
The manufacturers, Atlas Powder Company, Wilmington, Delaware, advise that they have prepared some interesting literature on this and other Atlas explosives that will be sent, without charge, to any one desirous of having such information.

Link Belt's New Vibrating Screen

The necessity for effective and thorough screening of many fine materials has long been recognized, says the Link-Belt Company, and in response to this need the Link-Belt Vibrating Screen has been developed and is now offered.

The screen in question, it is claimed, meets the most rigid requirements and is novel in principle.

The new departure is differentiated from other methods. On the Link-Belt Screen, the vibrations are produced by the action of "an unbalanced pulley" located midway and acrosswise of the screening frame and rotated at high speed. It is claimed that every portion of the screen's surface is thus vibrated uniformly so that the entire surface is utilized for its most effective work.



Link-Belt's New Vibrating Screen.

Further argument for the superiority of this machine is made by the statement that often the most effective devices have been marked by extreme simplicity, and that this is thoroughly true of the Link-Belt Screen.

The new screen is being offered for extensive use in the screening of by-products, coke, gypsum, cement, fertilizer, coals, pigments, chemical products, and in other industries, and is said to effect thorough screening through the finest mesh of any screenable products.

The inventor of the Link-Belt Vibrating Screen is Prof. G. A. Overstrom, a brilliant and widely-known mining engineer who was for many years Dean of the Utah College of Mining, where he was brought into intimate contact with the problems of fine ore concentration.

New Falk Corporation Representatives

The Falk Corporation, of Milwaukee, announces the appointment of representatives in San Francisco and Detroit to handle Falk Herringbone Gears and Falk-Bibby Couplings in those territories.

E. C. Myers is appointed to the San Francisco office with headquarters at 320 Rialto Building. His territory includes the states of California, Oregon and Washington.

Charles C. Walsh is appointed Detroit representative, with offices at 1500 Real Estate Exchange Building. He is thoroughly acquainted with the Michigan territory in which, together with Northwestern Ohio, he is to operate.

Makes Change In Chicago Office

Announcement is made of the opening of the new office and warehouse of the Good Roads Machinery Company, Inc., at 49th and Halsted streets, Chicago, to take the place of the old headquarters at 905 Tower Building.

New Special Use Porter Locomotives

Two locomotives of unusual type and measurement were recently built by the H. K. Porter Company and shipped to the Goodwin-Gallagher Sand & Gravel Corp. of Port Washington, Long Island, N. Y.

Four 4-wheel connected saddle-tank locomotives for 36-inch gauge track were shipped. Two of these

Porter Locomotive with Monel Metal Canopy.

locomotives have 11x16 cylinders and weigh 21 tons each in working order. The other two—as shown in the accompanying illustration—have 12x18 cylinders and weigh 26 tons.

The two smaller locomotives are of especial interest because they were built to the low height of 8 feet, 3 inches, in order to run under sand washers. From these sand washers there is a continual dripping of salt water and it was necessary to protect the locomotives from the corrosive effects of this water.

To accomplish this a canopy of non-corrosive monel metal was built over the entire forward part of the locomotive, and the cab was also roofed. Exposed pipes such as injector discharge and lubricator pipes were made of copper, and the locomotive protected in every way possible to resist the constant showers of salt water.

This departure, while it adds nothing new in equipment, greatly increases the facility of operation and the capacity of the locomotive.

This application of monel metal, by the way, will be of interest to operators, whose other equipment is subjected to the corrosive influence of sea water.

Clark Dust Collecting Equipment

Reducing to the minimum loss of life and property with a "safe and sanitary" dust system is the end toward which the Clark Dust Collecting Co., Inc., of Chicago, has worked in the development of its dust gathering equipment, according to their Bulletin No. 90.

Clark's Safety System is described as being applicable to any type of pulverizer and on any class of material. A feature of this equipment is found in the "Special Designed Safety BLOW OUT Vents."

Results obtained by the use of the Clark equipment are listed under heads, as follows: No. 1, No Loss of Material; No. 2, Less Power Required per Ton; No. 3, Reduced Upkeep; No. 4, Adjustable Classification; No. 5, Guarantee Even Mesh Finished Product; No. 6, Reduced Danger of Fire and Explosion; No. 7, Less Floor Space per Tonnage; No. 8, Air Device Dries the Material.

The company manufactures Pneumatic Conveying Systems and Wet Systems. Full description is contained in Bulletins 50-100-200-80-C10, sent on request.

Thrift in Lifting

"Thrift in Lifting"—Book 5060—has just been issued by Herbert Morris, Incorporated, of Buffalo, N. Y., this book being a collection of "practical information in the most concise form possible."

In 32 pages the bulletin tells a practical story of Morris cranes and lifting equipment, illustrated throughout with cuts of chains, blocks, tables and installations.

Thrift in lifting being a natural objective of all manufacturers whose heavy products require lifting in the process of manufacture, the Morris Company make many suggestions of value along this line.

The Dig-A-Load One-Man Shovel

A one-man operated shovel of heavy construction and easy mobility is being advertised by the Glasgow Engineering Co. of St. Louis. It is called The Glasgow Dig-A-Load, and is said to load 30 tons per hour. This machine is equipped with a ¼-yd. dipper and is mounted on a Fordson Tractor.

The Dig-A-Load consists of a bucket or dipper mounted on a pair of dipper sticks which are carried on a heavy structural steel framework and mounted on the Fordson Tractor. The action is described as being similar to that of a baby steam shovel, "though it is preferable to back the tractor about four feet from the pile to be handled and then run forward into the pile before hoisting the dipper." The dipper is raised by a cable which runs back to the main hoisting drum. It can be set to dig above, on, or about 4 inches below grade.

Dig-A-Load One-Man Shovel at Work

The Glasgow Dig-A-Load can be used in various operations, such as digging and loading sand and gravel from roadside pits, loading stone in quarries loading from stock to trucks, distributing, leveling and grading, and in other ways.

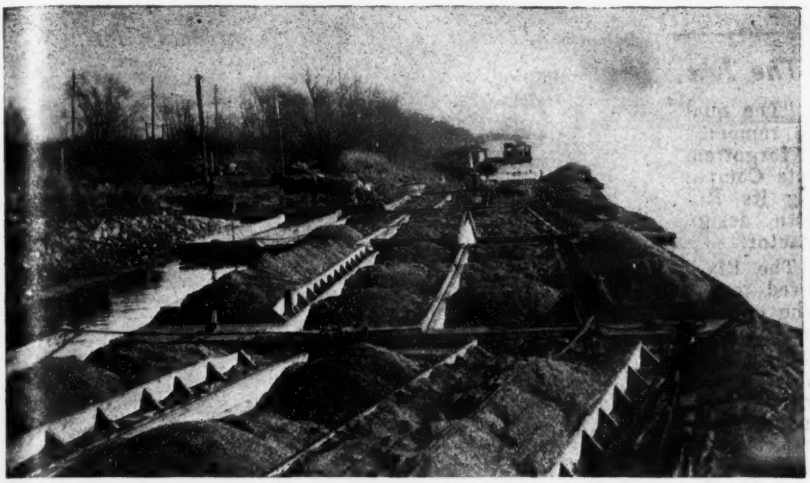
In quarry service, where the stone is blown from the face and broken up into pieces not over 8 inches in diameter the machine does good work, they say, providing the quarry floor is not too broken up by ledges, pipes and tracks to permit of maneuvering. The preferable method is to load into skips or push cars and then to drag the cars to crusher or hoist with the tractor. For this use rubber tired equipment is recommended.

On top of the ground the machine, it is claimed, loads around 37 tons per hour of screenings or rock from stock piles into wagons and trucks. At quarries which run only during the summer months, where stock piles are built up for winter use, the machine can be used in the quarry during the summer, and on the stock pile work the rest of the year.

Change In Corporate Name

Announcement is made that the Sanitary Collapsible Barrel Company of Pittsburgh has changed its corporate name to Pittsburgh Steel Drum Company. It is further reported that the products of this concern, "Hammerall" Steel Drums, are now being used by the largest concerns in the United States, including shippers of chemicals, mineral rubber, hot neck grease and asphalt.

Machinery for the manufacture of lime drums is just being completed, and the company will be able to deliver these drums in April. This new departure in manufacture is expected to produce a big business.



Make bigger profits from sand and gravel!

HOW?—Wash, grade and deliver onto scow, car or truck *all at one operation*—or at least *without a minute of lost time* and *without a wasted ounce of power.*

The Morris Hydraulic Method makes one job of everything from pick-up to shipment, takes fewer men, and eliminates the work that makes men do less when nobody is looking. Once the production rate of a Morris Pumping Outfit is established, you can safely figure on the same proportionate output every hour and if necessary every day of the month, as long as the supply bed lasts.

Those who own Morris Sand Pumps can almost invariably cut under price quotations of those who don't, and can still come out with a fat profit.

Our Bulletin 20 is filled with profit-producing hints for sand and gravel producers, and our Engineers gladly offer free but valuable additional suggestions based on individual existing conditions.

Morris Machine Works

Originators of Centrifugal pumps, both simple and multi-stage, and builders for practically all purposes since 1864.

Baldwinsville, N. Y.

Branch offices: New York, 39-41 Cortlandt St.; Philadelphia, Forest Bldg.; Cleveland, Engineers' Bldg.; Chicago, 217 N. Jefferson St.; Boston, 79 Milk St.; Pittsburgh, 320 Second Ave.; Detroit, Penobscot Bldg.; Charlotte, Realty Bldg.; Houston, 119 Main St. Sales Representatives: Buffalo, St. Paul, Kansas City, Denver, Salt Lake City, Seattle, Portland, Ore.; Los Angeles, New Orleans. Canadian Representatives: Storey Pump & Equipment Co., Toronto.

MORRIS
CENTRIFUGAL PUMPS

The Rix Digger and Hoist

"The quality of Rix machines will be remembered long after the price is forgotten." So says the Rix Products Company of Milwaukee, regarding its Rix Digger and Rix Hoist, both designed to fit the Fordson tractor.

The Rix Digger is a machine offered to readers of Pit and Quarry who can employ a shovel with a ¼ yard dipper, at a variety of small jobs.

They say the Rix Digger is so designed as to fit on the Fordson tractor without the necessity of drilling holes or in any way altering the mechanical construction of the Fordson. The boom consists of two 3-inch "I" beams extending far enough in front to handle efficiently practically every class of small digging work. The dipper is an extremely heavy ¼ yard capacity bottom release type, heavily braced, ironed and forked. The power is derived from the regular Ford take off.

The Rix Hoist fits the Fordson in the same manner as does the Digger, and is constructed of similar "I" beams, and powered in the same way. Its capacity is two tons with variable traction.

Full description and price will be mailed on application to the company in Milwaukee.

New Company Name

In order to more clearly identify the company with its product, the Universal Machine & Equipment Company has changed its name to the "Martin Tractor Shovel Company," which is the trade name of its product. There have been no changes in management or personnel, however.

New Bay City Electric Shovel

The Bay City Dredge Works has added one more to its family of machines. Announcement is made of a large 1½-cubic yard electric shovel with long boom for stripping work.

This machine weighs about 85,000 pounds and is equipped with a 60 horsepower electric motor with Link-Belt noisless chain-drive and is constructed of steel throughout. It is furnished with a heavy 60-foot boom and half caterpillar mounting.

It is claimed that the BAY CITY can cut a strip 100 feet wide, if necessary. It is one-man operated and handles stripping of this nature very economically. These machines can also be furnished in 1-cubic yard capacity with booms up to 80 feet in length, and mounted, if preferred, on track type mounting or with walking device. It is lubricated throughout by means of the Alemite lubricating system.

Bay City Electric Shovel with 60-ft. Boom and 1½-Yard Dipper.